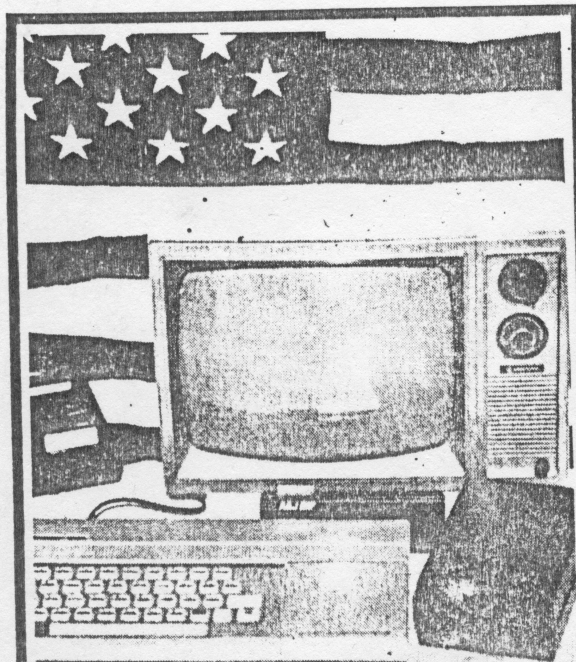


Feb/Mar

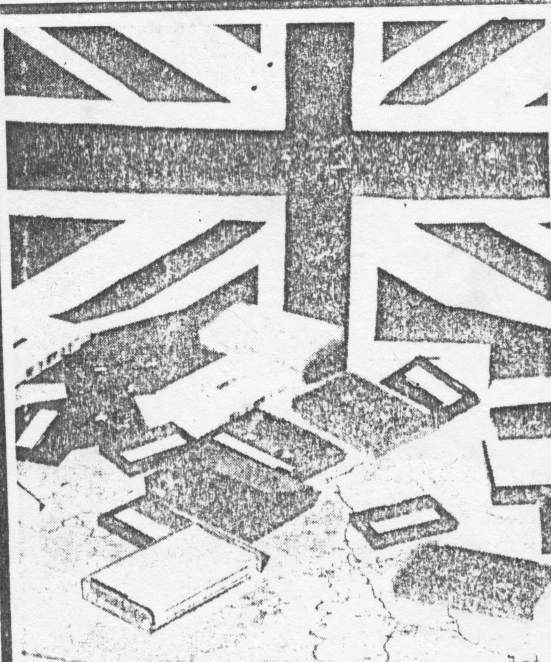
No. 12

\$2.00

# ASHLEY



Mass Storage for 2068



2068 Software from U.K.

YOU can buy a SPECTRUM Plus NOW  
see page 9  
Paul Hunter's Bank Switching Concluded  
More Program Tips from Mather White

Bulk Rate  
U.S. Postage Paid  
Portsmouth, Ohio 45632  
PERMIT NO. 151



# SPEED. REDEFINED

AN UNEQUALED EVOLUTION IN 2068 COMPUTING

Imagine: you slide into your seat, select a program disk and slip it into your disk drive. In about the time it takes your finger to press the button, your selected program is up and running.

Realize: you don't have to imagine anymore—The new Millennium K disk interface and disk drive system from Ramex will enable your 2068 to operate in the league of computers costing 5 to 10 times as much! In fact, when it comes to maximum transfer rates, total storage capacity per disk and efficiency of formatted operation, the Millennium K will out perform

Commodore,  
Apple IIe or IBM PC!

In order to extract the maximum efficiency from the disk, a whole new operating system had to be devised; the result—**SP-DOS.**

## SP-DOS

offers these operating features:

- Loads 32K per second
- Stores 820K per disk
- Occupies only 4K ram
- Compatible with most software

Super support!—a whole new generation of Disk Software

- Tasword II (Word Processing)
- Tasmerge (Mailmerge)
- Masterfile (Database)
- Omnicalc II (Spreadsheet)
- Devpac (Assembler)

Language Support • Basic  
• Disk Pascal • "C" Language Compiler

The SP-DOS system allows you to use all the Timex cassette commands such as:

- Save • Load • Save Data
- Load Data • Save Screens • Load Screens

• And all the Micro Drive Commands

Drives that may be used include:

Qume, Tandon, MPI, Teac, Shugart, etc.

Drive #1 is double sided, Quad density 160 tracks. Drives

#2,3,4 may be single or double sided, Double or Quad density.

You can wait and hear about the Millennium K from every one else, or take action now and start drivin' today!

The Millennium K interface only \$200.00

The Package: \$450.00 + \$5.00 S/H

Includes Drive #1, case, P/S, cables and interface

Orders are now being taken however, due to tremendous demand for the Millennium K interface system, orders will be on a strict first come, first serve basis. Reserve your system today!

Send check or money order or call 1-313-731-2163 for Visa and MasterCard orders. Michigan residents please add 4%.

**Ramex**<sup>TM</sup>  
International Ltd.

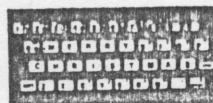
4801 VAN DYKE ROAD  
UTICA, MICHIGAN 48087  
TELE: 313-731-185, 1795

# FEB MAR T-S Horizons NO. 12

ENTER. From the Cluttered Desk	4	Game Scoreboard Program	18
User Groups	6	For TS 1000 & 2068 - K. Smith	
Reader Input EXTRA - R. Hartung	7	Using OPEN# and CLOSE# on the	19
PEMBuilder for TS 1000		TS 2068 - by Doug Gangi	
SPECIAL REPORTS for the TS 2068		More TS 1000 Programming Tips	20
NEW Mass Storage Devices	8	By Mather White	
Spectrum Software	9	TS 1000 Bank Switching (Concl.)	22
IN SYNC #1. by John Bell	10	Part 8 - by Paul Hunter	
Linecheck for TS 1000 & 2068		REVIEWS	
Odds, Ends, Etc. by Tex Faucette	11	Winky Board for 2068 - Fernebee	26
Startext and stuff		Badgammon for 2068 - D. Gangi	26
Bits & Bytes #4 by E. Fernebee	12	ACZ General Ledger 2000	27
2068 Word Processor Evaluation	13	Accounting Program - Faucette	
Part 2: Tasword II, Textwriter		2 Game Books for TS 1000	28
VIEWord, Letteriter		Reviews by Mather White	
MTerm II Printer Patches	15	T-S NEWS	30



#1 Nov'83 Creating/Saving Files (Johnson), Repeat Key and Uninterruptible Power Supply Projects, Numerical Analysis, Load/Save Problems, Reviews, and more!



#2 Dec'83 Matrix/Cursor Input (Johnson), User-Friendliness, Reset Switch Project, Memory Reduction, Rule of 78, ZX Cash Register, Graphics Tutorial, etc!



#3 Jan/Feb'84 Two Animation Programs, Simple Loading Aid Proj. (Young), Tape File Protection, Differential Equations, Ham Radio Reviews, User Group News & More!



#4 March '84 The Death of TCC, TS1000 Bank Switching (Hunter), Error Recovery (Johnson), Edge Connector Schem., Simpson Rule, Reviews, Reader Input, & more!



#5 April/May'84 "WORM" Word Processor (Young) Pt.1, Least Squares, TS1000 Graphics Program, TS2068 Future?, Bank Switching Pt. 2, Program Tips, Reviews, and more!

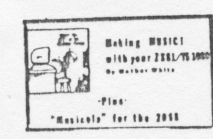
## BACK ISSUES



#6 June'84 Ts1000 As Church Aid, Interfacing Books, Num. Analysis, Hardware Tips, "WORM"-2, Switching-3, Good News from EA Brown, Six Reviews, and more!



#7 July/Aug'84, Telecommunications Issue, 2068 Program Tips, How A Compiler Works, Rotating Globe, Byte-Back Modem, TC for Beginner, Switching-4, WORM-3, S.I.N., etc.



#8 Sept'84 TS 1000 Music Program, 2068 Plotter, 2068 Character Set (Young), Address Program, Nine Reviews, Telecommunications Column, TS News, and more!



#9 Oct/Nov '84 - ANNIVERSARY ISSUE, TS 2068 Spirograph, Dave Higgenbottom interview, FORTH for T/S Computers, Spectrum section, Bank Switching-5, Telecommunications, Reviews, etc.



#10 Dec '84 - 40 PAGES, Making Backups of 2068 Software, Banner Programs, QL, TS1000 Program Tips, Christmas program, RS100vs.TS1000, MTermII, Horizon Awards, Switching-6, TSUGs, New Column, more!

12-issue subscription \$15 (in US)  
\$21 Canada, \$25 Other Foreign \$

Back Issues @ \$1.50 each \$

#1 #2 #3

#4 #5 #6

#7 #8 #9

#10 #11 Total Enclosed \$

### Subscription/Back Issue Order Form

Name

Address

City, St., Zip

Send to TS Horizons, 2002 Summit St., Portsmouth, OH 45662



## ENTER

I'd like to thank all of you for your patience. Yes we're late again and we're sorry. But we love you all and want to make it up to you. How can we do this? Well we've got some very special projects for TS Horizons in the very near future. We think you'll be pleased.

In this issue we also welcome John Bell as a regular writer. John's column will be different from most others in that it will often feature programs and programming techniques, instead of news-type information. Jules Gesang is recovering at home nicely from his heart attack. Unfortunately, Gordon Young has been sick for several weeks, and his doctor has prescribed rest so he will be taking a hiatus from T-S Horizons for a while. He's promised to be writing again soon, though.

It has been said that there must be a high degree of cooperation among the companies that support Timex and Sinclair products in order for them to remain successful. Just the other day I received some evidence that this cooperation exists. We got a package from our friend Eben Brown of the E. Arthur Brown Company. I noticed that the box the shipment came in seemed to have gotten a lot of use. The box had a shipping label from 21st Century Electronics in New Jersey addressed to Games To Learn By in Connecticut. Apparently Games To Learn By used it to ship something to Eben in Minnesota, who used it to ship to me. Well it just so happened the box was the perfect size for some copies of TS Horizons I needed to send to Chet Lambert in Alabama. Chet is the publisher of Computer Trader Magazine. Many would consider CTM and TS Horizons to be competitors but we and Chet have worked together to our mutual benefit on at least two occasions and may do so again in the near future. (I hope Chet's not superstitious or he might feel compelled to ship that box off again. This could go on for years.)

Well the deadline is approaching and I don't have much more to say in this month's ENTER. However, I do want to apologize to some people who might feel we've neglected them. We received a large number of complaints from people who failed to receive issue #11 and we really don't know what the problem is. We've checked our mailing list and in almost every case a copy of that issue had been mailed to those who wrote. The problem seems to be our local post office, and we will be talking to the post master to see if delivery can be speeded up. When you add our errated schedule and postal delays it can cause some problems.

Yours Sincerely, Rick Duncan

## FROM THE CLUTTERED DESK

Reader input plus other notes of interest

By Scott Duncan

Advertising/Circulation Manager

Scott Duncan was unavailable to write his column this month so the space will be used by a guest columnist, Mr. T.S. Subscriber from Yourtown, U.S.A.

Hi, I'm T.S. Subscriber and I've just gotten my mail from the box. Let's see here, a few bills, an old Christmas card, a recall notice on my 1972 Dodge... Well look at this. It's the January issue of T-S Horizons. Finally!! I wonder if those Duncan's will ever get another issue out on time. Of course I realize Rick holds another job and Scott goes to college, but my lands, this time it's two weeks late. At least, it's even a single month issue!

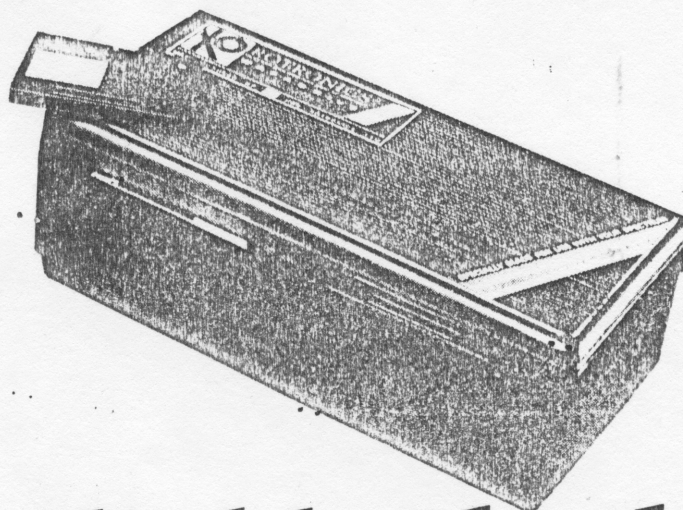
Hmm, that's sure an interesting cover. Let's take a look inside. I see Mr. Ferrebee has some good articles as usual. Oh and there's more of Paul Hunter's article, I'll be sure and start on that right away. Hey there's my user group listed there, boy that's great. We could use some more members! Uhoh there's the reader input column, I sure hope they don't print my nasty letter, I mailed out yesterday. Wow, what is this? Superprinter, now that looks like a great program. Let's see what's further back in this issue; looks

★ ONLY ★  
\$229<sup>95</sup>

How much would you expect to pay for a dual 128K fast access storage system for your Timex 2068 that included Centronics and RS232 interfaces, Spectrum software and buss emulation, and free word processing software as standard?

Chances are it's a lot more than \$229.95. But this is what will buy you the incredible DAMCO/ROTRONICS Wafadrive unit. (And if you already own an Omni-Emu Chameleon the price is even less!)

\* The Omni/Emu cartridge is required to operate the Wafadrive system. The Wafadrive will not operate by just changing the ROM to the Spectrum ROM or by using the ROM switch.



# A fast reliable dual-drive storage system

## Integrated System

The Wafadrive is a complete system which contains the micro interface, two 128K drives, RS232 and Centronics ports, all in one attractively-styled, compact unit. There is a minimum of connecting leads and no extra boxes to clutter the desk top. Like the majority of professional systems, the units are dual drive. This offers the optimum balance between system flexibility and cost. Built-in serial and parallel interfaces allow the direct connection of just about any popular printer.

## Fast and Reliable

The Wafadrive achieves very fast loading and saving, but not at the expense of reliability. Extensive research and the use of high grade materials ensure that the Wafadrive will give years of dependable operation. Data integrity is on a par with floppy disk. The fully inter-

changeable wafers are available in three sizes—128K, 64K and 16K. Low capacity wafers give faster access. They are therefore most suitable for program development applications. The high capacity wafers are suitable for more general data storage. Loading rate is approximately 2K per second—almost twice as fast as similar products.

## Software

Armed with the com-

prehensive user manual, blank wafer and word processor supplied, you can use your Wafadrive right away. There is also a rapidly growing range of software to enable the programmer and games player to exploit the Wafadrive system to the full.

## Spectrum Emulation

The Wafadrive includes the Omni/Emu Cartridge. This enables the Timex 2068 to run thousands of Spectrum

programs. The rear edge connection is compatible with Spectrum Hardware as well as allowing use of the 2040 printer.

Wafadrive for the Timex 2068 and the 16/48K Spectrum are available now. Versions for other popular home computers are under development.

Send a 20 cent stamp for a full color brochure and information on software and accessories.

## DAMCO/ROTRONICS WAFADRIVE PRICE LIST

DAMCO/ROTRONICS Wafadrive Timex 2068	\$229.95
16K wafer	\$2.99
64K wafer	\$3.49
128K wafer	\$3.99
Heathrow/Nightfall (48K: Hewson)	\$19.95
Space Wars/Siddab Attack/Luna	\$19.95
Attack (48K: Hewson)	
Beer: Bover/Wong's Loopy Laundry!	\$14.95
World Cup (48K: Artic)	
Starbike (48K: Softtek)	\$12.95
The Artist-graphic utility (48K: Softtek)	\$14.95
ZAP machine code development package (48K: Hewson)	\$25.95
RS232 cable	\$12.95
Centronics (parallel) cable	\$12.95
Total:	



POSTAGE: \$5.00 for Wafadrives  
\$1 per order for software & cables  
(no postage charge for software  
or cables if ordered with drive)  
MA residents add 5% sales tax

## ORDERING INFORMATION

Payment can be made in the form of money order, check, VISA, or Mastercard. Personal checks take two weeks to clear. VISA and Mastercard orders must include number, expiration date, and owner's signature.

- ☐ I enclose a check/Money Order  
☐ Charge my VISA/MC account no. \_\_\_\_\_  
☐ VISA/MC Expiration date \_\_\_\_\_

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Mail to: DAMCO ENTERPRISES  
67 Bradley Ct., Fall River, MA 02720  
(617) 678-2110

Due to the fluctuation in the international currency, our prices are subject to change without notice.



like some good software reviews, and theres another product evaluation by Tex Faucette. John Marion seem's to have written a good review, again. Now, here's a great idea. T-S News, I like this page.

Hey wait, that's on page 36; this must be another one of those 40 page issues and it came out pretty good this time too.

Great, an indexation of issue 1-10, now I can know just what back issues I really want.

Boy, those people at T-S Horizons really pack alot of useful information in each issue. That's probably one reason why they run behind schedule a lot. It must be awfully difficult to find great articles like these for the Timex machines. I suppose another reason might be difficulty in finding advertisers who still support US die hard users. I noticed the ratio of ads to information was pretty slim. After all any company has to cover it's costs, and on occasion make a little money. I hear those fellas do good to break even. They must really enjoy the challenge of supporting a machine that's been abandoned by the parent company.

Boy, I wish I hadn't have sent that nasty letter!

T-S Horizons wishes to thank T.S. Subscriber

for the column this month. Scott Duncan will be back next month if his usual cluttered form answering letters and will let you know who that 1500th subscriber is. TSH

## USER GROUPS

Northeast Florida T/S Users Group

1707 King Street

Jacksonville, Florida 32204

John Kuhn

Newsletter: Sync Times

Montreal Area User Club

C.P. 33

Joliette, Quebec, Canada J5E 3Z3

Ocean State Timex Sinclair User Group

15 Kilburn Court

Newport, R.I. 02840

Bob Dyl

## Is your group listed?

### Statistics and Programming Books

Timex/Sinclair 1000/1500/ZX81 16 K

- New Book: Nonparametric Statistics  
300 pages; \$15.00  
Twenty three programs including Chi-square, Signed Rank, Mann-Whitney U, and Friedman. All statistics include listing, complete example of experiment using statistic, and complete example of input and output.
- Programs available on 12 cassettes; \$20.00
- Comparison of Means: t-tests and Analysis of Variance  
170 pages; \$11.00  
Twelve programs including ANOVA with 1, 2, or 3 factors. Repeated measures on any or all factors. Explanations of programs include listing and example of input and output.
- Programs available on 6 cassettes; \$15.00.
- Basics of Timex Sinclair 1500/1000 BASIC  
180 pages; \$7.00  
An introduction to Sinclair BASIC.
- New Book: Translating Programs into Timex Sinclair BASIC  
190 pages; \$8.00  
Intermediate to advanced level book showing techniques for translating programs written in various dialects of BASIC. A comprehensive dictionary of keywords is included.

Our books and cassettes can be returned for full refund within 90 days of purchase. Order from the above description or send for a free detailed description of the books. If requested, we will include a free Multiple Correlation program listing (including example of data entry) with each order or request for book descriptions.

K.D.V.H.E. Publisher's  
P O Box 6788  
Chicago, Illinois 60680

# MICRO BBS-1

FOR USE WITH BYTE BACK MD-II MODEM  
& 16K TS 1000!

20 messages!  
Sysop note  
another first!

\$35

G. Young  
4616 N. River Road, #27  
Oceanside, CA 92056

READER INPUT EXTRA  
REM Builder for TS1000  
By Robert Hartung

The best of New Year's to you and Scott and Randy, and congratulations on the constantly improving quality of T-S H. Thanks also for printing my version of the "Spirograph" routine. (See TSH #10, p. 29)

Seeing Mather White's REM-expansion routine in T-S H reminded me of a REMBUILDER routine I use with my ZX81 -- yes, I still use it, especially for machine code programs, since getting my 1S2068. It allows either building a REM to any desired number of characters, or adding just one byte at a time as each data item or machine code is entered to a given address. It is rather lengthy but if SAVED to tape as a utility routine is very handy for use in any listing requiring the POKEing of data or machine code into a REM statement.

The routine requires first making a short REM line containing code needed to CALL the MAKE-SPACE routine in ROM. These codes may be POKEd directly to the given addresses of an eleven-byte line 1 REM, or else a short listing may be entered for use as a loader as follows:

```
LISTING 1
1 REM 12345678901      4 PRINT N;"=";P
2 FOR N=16516 TO 16522  5 POKE N,P
3 INPUT P              6 NEXT N
```

POKE directly or use the loader to enter these codes at the given addresses:

16516,42	
16517,130	16520,155
16518,64	16521,9
16519,205	16522,201

REMBUILDER LISTING:

```
1 REM (11 bytes)
2 GO TO 3
3 POKE 16523,PEEK 16396
4 POKE 16524,PEEK 16397
5 LET M=PEEK 16523+256*PEEK 1
6524 6 LET D=M
7 PRINT " INPUT NO. REM SPACE
S REQUIRED OR **A** TO ADD ONE
AT A TIME"
8 INPUT B$
9 IF CODE B$>37 THEN GOTO 13
10 LET A=VAL B$
11 LET B$="27"
12 GOTO 20
13 LET A=1
14 CLS
15 PRINT "KEY ENTER TO STOP"
16 PRINT "CODE AT ADDRESS ",D;
17 INPUT B$
18 IF B$="" THEN STOP
19 PRINT B$
20 IF PEEK 16442<3 THEN SCROLL
21 LET D=VAL B$-2
22 FOR J=1 TO A
```

COMMENTS:

1 Contains characters POKEd by above codes)  
3 Stores location of start of DFILE (display file) as it was with the original empty REM statement at line 58. The address (M-1) is the beginning byte of this REM statement if no changes are made in the listing after the last-line REM is expanded.

16 Addresses given here mark the location of each code or byte of data POKEd in.

```
23 POKE 16515,INT ((D+J)/256)      Address of space currently
24 POKE 16514,D+J-256*PEEK 165    being added to REM
15
25 RAND USR 16516                  ; CALL to MAKE-SPACE routine
26 POKE D+J,VAL B$                 in ROM at address 2459d
27 NEXT J
28 LET D=VAL P$                     ; New address for DFILE
29 POKE (M-3),INT ((D-M+2)/256)    ; New length-of-REM bytes at
M-3                                ; beginning of REM statement
30 POKE (M-4),D-M+2-256*PEEK (    in RAM
31 POKE D,118                       ; New end-of-REM byte
32 GOTO 14
33 SAVE "REMBUILDER"
34 LET P$="PEEK 16396+256*PEEK 16397" ; Definition of beginning of
16397                                DFILE which follows last
35 GOTO 3                             byte of BASIC listing
50 REM
```

Before SAVEing to tape, POKE 16389,76 for shorter SAVE and LOAD times. Start the recorder and enter RUN 33 to make the SAVE. On re-LOADing, the first prompt asks for the entry of either the number of spaces to be defined in the last line 50 REM and filled with periods, or else the letter "A" if you wish to expand the REM just one byte at a time as each code is POKEd into it. To restart, enter line 50 as an empty REM statement and RUN 34.

If your machine code routine is relocatable, i.e. contains only relative JP and CALL addresses or CALLs to ROM, and none of the "forbidden codes" 118 and 126, the completed REM statement in which it is stored may be brought down by EDIT and changed to line 1. Otherwise, no changes may be made in the REM line nor in any of the lines preceding it without disrupting the routine you have POKEd into the last-line REM statement.

Since the variables M and D give the location of the beginning and the ending bytes of the last-line REM, this routine may be quite easily adapted for storing and retrieving data files, with de-limiter characters to make a separation between items in the file. It makes possible the expansion of the file REM only as actually needed to contain the items currently in the file. This can conserve considerable time in making SAVES and LOADs of shorter files to and from tape with the ZX81/TS1000.

I have used the REMBUILDER as the basis for a filing and sorting routine in BASIC, which is quite slow, but in machine code (see Tom B. Woods "Linear Search" in SYNC 3:6, p.72) a 13K file may be searched in about a second--not at all shabby for a "toy" computer, as so many of its critics have called it! Rather than letting the old ZX81/TS1000 gather dust now that you have up-graded, it could be used as a very practical dedicated filing system, as many are doing with programs like ZX PRO/FILE.

TSH

Best regards.  
Bob Hartung  
2416 No. County Line Road  
Huntertown, IN 46748



# SPECIAL REPORT

## MASS STORAGE DEVICES For The TS 2068

As E. Arthur Brown puts it, it's "The Last Unkept Promise...Kept."

"High speed access to stored programs and data is a necessity for serious computer use. Not having it is the only thing that's hindered the use of Timex computer for many serious applications. We all know that the computers have always been superior in their technology. That's why it feels so odd having to use them with cassette storage media. It's hard to believe Timex could produce such advanced machines and then have them access data from a cassette recorder! Well, those days are gone for good."

Of course Brown is talking about the A & J Microdrive, a mass storage system, based on the use of microtapes.

E. Arthur Brown is selling the A & J system, as are about 20 other distributors across the country. Also available are two new disk drive interfaces for the 2068 and a very interesting new product similar to the A & J, which has a lot going for it.

The purpose of this article is to provide a cursory overview of these mass storage devices. More complete reviews will probably be published in future issues of T-S Horizons. For now we want to list the major features along with some advantages and possible disadvantages of each system.

A & J Model 2000 \$199.50  
1050 "I" East Duane Ave Sunnyvale, CA 94086

This is one of the nicest products available for TS 2068. It's very easy to use and well-documented. Anyone who can use a tape recorder can use the A & J.

Some of the major features:  
The microdrive automatically taps into the

computer's power supply, so no separate plug is needed. The tapes are a continuous loop, so unlike a tape recorder, no rewinding is needed. (A more complete review was published in TSH #11, page 29.)

Advantages: Several hundred units have been sold by now. A second drive may be added (\$125 additional). The operating system for the drive is on EPROM so as not to take up any RAM. Long flexible cable connection. Programs expected to be sold on microtapes by several vendors.

Disadvantages: Not quite as fast as a disk drive, and tapes must be specially ordered and are more expensive than floppy disks.

Damco/Rotronics Wafadrive  
67 Bradley Court  
Fall River, MA 02720  
\$229.00

The Damco system is actually a modified version of the Rotronics Wafadrive system sold in England for the Spectrum. Rotronics provides the major competition for the Sinclair Microdrive. The major difference is that a Spectrum ROM has been added, so essentially with the Damco system attached, your TS 2068 is virtually turned into a Spectrum.

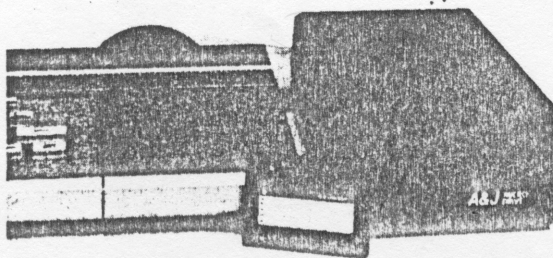
The number of features provided at this low cost is impressive. First, there are TWO drives (as in the Rotronics product). Also built-in are a Centronics interface as well as an RS 232 port, so almost any printer made can be utilized, without the expense of buying a new interface. Finally the rear buss of the computer interface is configured the same as a Spectrum edge connector so that Spectrum peripherals can be used on the 2068/Damco combination. (Some of the peripherals Damco hopes to import are light pens, graphics tablets, and light pens.)

The mechanism of the drives is the same as the A & J drive and they use the same tapes for storage.

A less expensive version is available for 2068 users who already have a Spectrum conversion device.

Advantages: Two drives built-in. Free word processor included. (Said to be as good as Tasword.) Built-in printer ports. No separate power supply needed. Turns 2068 into "Spectrum."

Disadvantages: Will not run TS 2068 software. Same disadvantages as A & J above. TS 2040 cannot be used.



Millenia K Disk Interface \$200.00  
 Package including interface, one disk drive,  
 power supply, and cables \$450.00  
 Ramex, 48945 Van Dyke Road, Utica, MI 48087

Well Ramex finally did it. The Millenia K is now being shipped to customers. If you have the finances this sounds like a fine choice. Ramex says you can load 32K in a second and store 820K on a disk. From their ads it appears that Ramex is busily converting choice Spectrum programs to run on SP-DOS, the Millenia K's operating system. This is the deluxe model. It can accommodate up to four drives.

**Advantages:** Uses standard disk drives so they can be used with a different computer. Disks are cheaper than microdrive tapes. (The cost difference between blank disks and tapes (\$2 or more) multiplied 100 or so would make up the price difference).

**Disadvantages:** Substantial investment. No Spectrum compatibility. Maybe more complicated than Microdrives.

Aerco FD-68 Interface \$199.00  
 Box 18093, Austin, Texas 78760

As of this writing the Aerco interface is about 3 weeks away from production (but they've been saying this for quite some time). Aerco is known for making quality interfaces of the TS 1000 and many 2068 users are waiting for this new interface eagerly.

The FD-68 will interface with up to four drives of various sizes, from 3 inch to 8 inch. It also uses the 2068's built-in bank switching capabilities and has a 64K RAM on-board; potentially doubling capacity.

**Advantages:** Same as Millenia K.  
**Disadvantages:** Same as Millenia K.

## SPECIAL REPORT

The Spectrum is one of the most popular home computers in England, and the third-party support for the machine is fantastic. The community of Timex 2068 users in America have long hoped that someone would tap into that software resource and channel it into North America. Finally this seems to be happening.

The English Micro Connection (EMC) is a new company formed for the sole purpose of bringing quality products into the U.S. from England. (Note: EMC is also selling the Spectrum Plus, direct from England to U.S. customers; see their ad on the back cover of this issue for more information.)

Have you ever heard of Oxford Computer Publishing? How about Beyond Software? You can bet your Spectrum using counterparts in Great Britain have! Bob Dyl of the English Micro Connection has exclusive U.S. marketing rights to these two companies' products, as well as to the English companies Hysoft and Ultimate.

Oxford Computer Publishing (OCP) has a complete line of business, and other programs (the Spectrum is quite popular as a business computer over there). OCP's business programs such as Finance Manager, Stock Manager and Address Manager, as well as utility programs like Machine Code Test Tool, Master Tool Kit and others are all available from EMC at reasonable prices.

Beyond is the maker of many of England's most popular "mega games", as users call these sophisticated computer games, like "Lords of Midnight", "Doomdark's Revenge", (see TS News for more information), "Sabre Wolf" and others.

## SPECTRUM SOFTWARE For The TS 2068

Also available through EMC are languages for the Spectrum like Pascal, "C", Logo, and Micro-Prolog.

Other companies who are importing Spectrum programs are E. Arthur Brown, 3404 Pawnee Drive, Alexandria, MN 56308; Games To Learn By, P.O. Box 78, Collinsville, CT 06022; and Curry Computer 5344 Banff Lane, Glendale AZ 85306.

All of this is great for 2068 users who have Spectrum conversion devices but what about of us who don't. Well Knighted Computers, 707 Highland St., Fulton, NY 13069 has just negotiated with Quicksilver, another respected English company for the rights to some popular programs which have been converted to run on the TS 2068 with no modification.

These include Gridrunner, Traxx, The Snowman, Laserzone, XADOM and ten other popular Quicksilver games from England. Most of these games are in machine code and have joystick control and sell for \$19.95 from Knighted. We understand that many of these games are also sold on Wafertapes compatible with the A & J microdrive.

How about more serious TS 2068 compatible software from England? One such program that RAMEX sells is "Masterfile" (reviewed in TSH #11) a powerful filing program that has been converted to run of the TS 2068 and TS 2040 printer. Ramex is also selling TS 2068 versions of Omnicalc II and other British programs.

We hope that this is just the beginning of a continuing process of bringing the best Spectrum products to the U.S. Count on T-S Horizons to keep you informed of each future development.

TSH



Several times I spent half an hour or more typing a program from a magazine, only to spend the next half hour finding and correcting my typing errors. The LINECHECK program solves that problem...All of the programs printed in this column and hopefully many of the programs submitted to TS HORIZONS in the future will have the LINECHECK printout at the end of the listing.

How the program works (2068);

9990 LETs loc = the beginning of the basic program

9991 LETs total = 0 and finds the line number of the line

9992 finds the line length

9993 FOR-NEXT loop adds and then

9994 subtracts each successive

9995 byte in the program line.

9996 PRINTs the line number and total for each line.

9997 LETs loc = start of next program line

9998 checks for end of program

9999 starts process on the next line

How to use the program;

- 1; Type in the program.
- 2; RUN the program.
- 3; compare the program print out to the listing in the magazine. If there are any differences in the two listings, you will know which line the mistake is in.
- 4; Correct any mistakes and SAVE the program to tape.
- 5; Type in a program and MERGE the linecheck program.
- 6; Run the program using; 'RUN 9989' and compare the results. Correct the errors in the line numbers that do not match. When you have a mistake free copy of the program DELETE the LINECHECK lines and save the program to tape.

I hope that the LINECHECK program will make your future computing easier. Coming next month, a program for the 2068; User defined graphics made easy.

## LINECHECK

TS 1000 version

```

          *****
          BY JOHN BELL
          LOC=10000
          TOTAL=0
          LOC=10000
          LENGTH=PEEK (LOC+1)-PEEK
          LOC=LOC+1 TO LOC+LENGTH
          TOTAL=TOTAL+PEEK LOC-PEEK
          PRINT LOC, TOTAL
          LOC=LOC+LENGTH+1
          IF LOC=9999 THEN GOTO 9999
          GOTO 9990
  
```

TS 2068 version

```

          *****
          BY JOHN BELL
          LOC=10000
          TOTAL=0
          LOC=10000
          LENGTH=PEEK (LOC+1)-PEEK
          LOC=LOC+1 TO LOC+LENGTH
          TOTAL=TOTAL+PEEK LOC-PEEK
          PRINT LOC, TOTAL
          LOC=LOC+LENGTH+1
          IF LOC=9999 THEN GOTO 9999
          GOTO 9990
  
```

T/S 1000

T/S 2068

```

          *****
          BY JOHN BELL
          LOC=10000
          TOTAL=0
          LOC=10000
          LENGTH=PEEK (LOC+1)-PEEK
          LOC=LOC+1 TO LOC+LENGTH
          TOTAL=TOTAL+PEEK LOC-PEEK
          PRINT LOC, TOTAL
          LOC=LOC+LENGTH+1
          IF LOC=9999 THEN GOTO 9999
          GOTO 9990
  
```

TSH

## ODDS, ENDS, ETC. #2 by Tex Faucette

"STARTEXT" and Stuff  
By Tex Faucette

My normal rule is to refrain from comment on anything I have not experienced. Being ultra-conservative, I believe nothing I read, and only half of what I see. On the other hand, I believe that most rules may be broken now and then for a good cause.

"Ask and ye shall be given" is another of my favorite quotes, which brings us around to the subject of "STARTEXT". I recently asked, in Print, for someone to tell me what the heck it was, and now I know for certain that I have readers! One of them James McKnight of Mesquite, Texas, went so far as to send me Vol. 1 No. 2 of Startext INK, the official newsletter of STARTEXT. Thanks again, James!

STARTEXT is a service of the Ft. Worth Star Telegram, one of the leading newspapers in the state. STARTEXT is a subscription service. Rates are very reasonable at \$9.95 per month (3 month minimum) and NO ON-LINE charges. This would appear to be an incredible bargain for those in the Dallas/FW Metro area, and not unreasonable for those who must use a long-distance call to access the service.

The newsletter, Startext INK, contains a "Users Guide", "Keywords List", and "Classified Index", as well as news items and regular columns. Like most newsletters, reader input is encouraged.

The issue I received contained the story of the initiation of "Version 3" software, and another (by Julie Barrett of Dallas T/S User Group) announcing the debut of a "starsoap" entitled "As The CRT Scrolls". I understand that Julie is one of the authors of this "starsoap". I would have preferred "The Bugs Of Our Lives", but to each his/her own.

STARTEXT also has "E-mail", want ad previews (great for apartment and job seekers), and other Videotext features.

Yes, Virginia, your \$29.95 and up Timex-Sinclair can talk to an umpteen thousand dollar VAX! Contact STARTEXT at P O Box 1870, Forth Worth, Texas 76101. I have no idea how long the offer will be open, but as late as December 1984 STARTEXT was offering a free trial password!

I only hope that more of my readers will discover similar services in their own immediate area. Looks like a natural step

into today's technology that any large newspaper could take...

Another addition to the lousy documentation provided with the otherwise excellent "MTERM II" communications software showed up in the December issue of the newsletter from T.S. Services (P O Box 15214, Red Bank, TN 37415). Written by Dave Clifford, the article concerns that mysterious "CON" item in the lower left corner of the menu...Dave also provided numbers for a couple of Bulletin Boards in the L.A. area which have things interesting to the T/S community.

Trouble is, as these BBS numbers get passed around, the systems get so busy one has to burn lots of midnight-to-dawn oil to get his turn.

"MEMOTEXT" on tape, done I.A.W. Fred Nachbaur's article in SYNCWARE NEWS is continuing to serve as a "work copy", while the original plug-on unit is filed for future reference. No problems experienced to date with the tape copy, it works just like the original except for the added loading time, and it may actually make a difference in the power supply requirements. TSH

People's Software Supply  
c/o Chris Nystrom  
809 E.N. 18th St.  
Abilene, Texas 79601  
915-673-3538

Hardware:  
T8 2088.....\$125.00  
T8 2040.....\$90.00  
TIMEX paper.....\$0.00

Software:  
\* Text Editor 2000.....\$0.00  
\* Star Trek.....\$0.00  
Guardian.....\$0.00  
Spelling II.....\$0.00  
Time Teacher I.....\$0.00

Cartridges:  
Crazysbug.....\$10.00  
States & Capitals.....\$7.00

Terms:  
All merchandise (except \*)  
subject to availability.  
Add \$5 shipping and handling  
for hardware, and \$1  
for software and paper.  
Check or money order. Personal  
check requires three  
week delay to clear. Sorry  
no COD's or credit cards.



## **BITS and BYTES #4**

By Bill Ferrebee  
MOUNTAINEER SOFTWARE

Hello again! We've finally gotten a good grip on 1985, and now let's hope it brings us only GREAT things in the world of T/S.

Even though Timex left us "out in the cold" about a year ago, we haven't been forgotten. In fact there are now MORE products available than anyone would have imagined...printer interfaces...graphic tablets...Spectrum converters...microdrives...and GREAT software! And, I feel I can safely say, this is only the BEGINNING!

As of this writing, no less than THREE companies are busy working on 2068 interfaces for full-size disk drives. One interface will even have capabilities for CP/M, which will open a whole new world of Public Domain software for our use.

Not only will the rush of British software enable us to build a greater library, but even more great programs are being developed by us right here in the U.S.!

Be assured that we at T-S HORIZONS will do what we can to keep you informed as to the latest developments in all aspects of T/S computing.

I have just moved into a new job (they were actually crazy enough to promote me into a management position!), and it will allow me more time (hopefully!) to devote to my main love...T/S!

I will be getting in closer contact with T/S dealers and manufacturers, and hope to give you advance notice of new products and services of importance to T/S users.

You will find the next installment to the World Processor review elsewhere in this issue. I say "next" because I have found it will take more than one article to do these programs justice.

Also, I have found some modifications and patches that can be used to expand the capabilities of many of the WP packages. I will be including these in future issues.

If any of you have modifications that you would like to share, send them to me at the address above. Let's spread the knowledge with each other and become more informed!

Making the move to my new job has caused me to spend less time with my modem, so there will not be an installment this month to "In Touch With the World" or "MEERM Tutorial". They will return next month, better than ever!

Finally, I would like to thank Larry Chavarie of Ottawa, Ontario, Canada for the material he provided me with. Larry sent me a very nice 3-page letter, along with copies of ZX COMPUTING and SINCLAIR USER. I am amazed with the fantastic programs listed in these publications, and plan to share one with you in T-S HORIZONS each month.

These programs are written completely in BASIC, and will run on a 2068 WITHOUT ANY MODIFICATION!

If you would like to communicate with Larry, his address is:

Larry Chavarie  
1707-415 Greenview Avenue  
Ottawa, Ontario, Canada K2B 8G5

Thanks Larry!

Well, that's it for this month. Until next time, keep in touch, and Happy Computing! TSH

### **IT'S FAST IN SLOW MODE INCREDIBLE IN FAST MODE**

**THE BEST FILING PROGRAM FOR YOUR ZX81, TS1000,  
TS1500 OR YOUR MONEY BACK**

INTRODUCING

## **FASTFILE**

**PROFESSIONAL DATA MANAGEMENT SYSTEM**

*Holds more data than you ever thought possible!*

Written in lightning fast 100% machine code. Sorts 1500 5-byte records in 24 seconds, 500 in 3 seconds! Searches through 1500 records in 1 second! Adds up 1500 decimal numbers in under 2 seconds. Built in word processor allows easy data entry. 4 data types stores more information in less memory. Add, change, delete, LPrint, search and query are all as easy as pointing your finger. Several different kinds of files can be in memory at the same time. Complete query system answers "How many...?", "How much...?", or "Which...?" type questions. Includes an example checkbook program which can store 400 checks in 16K! Manual includes information on how to create coupon/refund files, mailing labels, inventory control, address book, appointment scheduler/calendar and your own files.

To order send \$19.95 plus \$2.00 P&H for cassette and manual. Tom E. Cole, 1314 Speight #15, Waco, TX 76706  
Texans add local tax.

## 2068 Word-Processor

### Software Evaluation

(Part II)

By Bill Ferrebee

The original intent was to make this a 2-part article on Word-Processor programs available for the 2068. But because of the many programs available we will extend this article to give each program a fair and equal review.

This month we will look at 4 Word-Processor programs in depth:

- 1) TASWORD TWO
- 2) TEXTWRITER Series (2000, 2000 +, 64)
- 3) VIEWord.
- 4) LETTERITER/BUFFERITER

Each of these program are available for purchase, and I will provide you with addresses and prices at the head of each review.

TASWORD TWO  
\$49.95

Ramex International  
48945 Vandyke Road  
Utica, Michigan 48087

TASWORD TWO was developed in England, to run on the Spectrum. It utilizes the 64-column mode of the 2068, both on the screen and on the TS 2040 printer. I use a 12" B & W television with it, and have no problem reading the screen.

By utilizing the TASMAN (or AERCO with a small programming change) interface, you can use a full-size printer with TASWORD TWO. If your printer has special character capabilities (such as italics, compressed or expanded print), they can be accessed through the use of the 2068s graphic characters.

TASWORD TWO has a very useful "wordwrap" feature, that gives you a clean right margin, spacing between words to make the length of all line of text equal. Both the left and right margins can be set and changed anywhere in the textfile.

Insertion or deleting of text can be done by letter, word, or line. Also, entire blocks of text can be moved, deleted, or copied to another place in a textfile.

Global word search enables you to find and replace misspellings after completing a textfile. And two or more textfiles can be merged together to save retyping.

A nice feature of TASWORD TWO is that "what

you see is what you get". The screen formats the textfile exactly as it will appear on the printout, with the exception of special character enhancements. This means that if you wish to center a portion of text on a line, it will be centered on the screen also. This give you a better representation of what the finished document will look like.

TASWORD TWO comes with a complete Instruction Manual, along with TASWORD TUTOR, a tutorial textfile that is included on the program tape. It explains the various functions of TASWORD TWO, and give you examples to practice with.

I feel that TASWORD TWO is an easy-to-use, well developed Word-Processor program, and will be beneficial to anyone that uses it.

#### TEXTWRITER Series:

TEXTWRITER 2000 (\$18.95)  
TEXTWRITER 2000+ (\$24.95)  
TEXTWRITER +64 (\$29.95)  
Robert Fingerle  
39639 Embarcadero  
Fremont, California 94538

The TEXTWRITER series is 3 Word-Processor programs written to complement each other. TEXTWRITER 2000 is for use with the TS 2040 printer, while TEXTWRITER 2000+ is for an AERCO interface and a full-size printer. TEXTWRITER +64, the latest of Robert Fingerle's creations, utilizes a 64-column screen, like TASWORD TWO and MSCRIPT, and is also designed to use the AERCO interface.

If you get used to using any of the TEXTWRITER programs, switching to another will be very easy. The menus and procedures are virtually identical for all three, with the exception of setting line length in the last two.

These programs have many of the useful features needed in a good Word-Processor program, such as easy editing, text block movement, wordwrap, centering, and print enhancements. But setting these features takes a little longer, and the screen look of the text is NOT the same as it will look on the printed page.

However, I found all three TEXTWRITER programs to be easy to use, and well worth their price. Also, if you currently only own a TS 2040 printer, you will know that you can get a good WP program for now. Later, when you advance to a full-size printer, you will not have to learn a new program.

My hat is off to Bob Fingerle for a job well done!



VIEWord  
\$25.00 (includes MAIList)  
Jim Clatfelter  
646 Corwin Avenue  
Glendale, California 91206 . .

VIEWord is a very interesting Word-Processing package from Jim Clatfelter. His theory is that the use of a cursor to edit wastes 50% of the time used in writing a textfile. He uses a different approach to editing...first you specify the line number you want to edit (which is always displayed). Next, you move to the location in the line you want to change, specify the change you want to make (edit, insert, delete), and make the change.

I was accustomed to using a cursor, so it took a little time to get used to it. But, it's really not a bad way to edit.

Scanning of a completed textfile is easy to do. You can move by 5 lines at a time, saving time when proofreading. Also, line and page lengths can be set (this program works with both a TS 2040 and full-size printers), as well as page breaks.

Included with VIEWord is MAIList, a mailing list management program designed to command compatible with VIEWord.

Another program that is compatible with VIEWord and MAIList is FORMail (\$10.00 additional). FORMail enables you to merge formletter textfiles written with VIEWord and address files made with MAIList. This give you the ability to do multiple mailings using one letter form. I feel it is well worth the additional cost for FORMail, if you ever plan doing that sort of thing.

Again, I say that Jim took another way around, but VIEWord is a useful program for the 2068.

LETTERITER/BUFFERITER  
\$19.95  
Mountaineer Software  
115 North 7th Avenue  
Paden City, West Virginia 26159

For the final program this month, I have decided to do something taboo...review a product I SELL! Before you stop reading, let me explain.

First, I did not write LETTERITER/BUFFERITER. It was developed by a colleague of mine that is very good at working with 2068 Basic. Second, I decided to include this program because of the unique function it has.

The special feature of this software is not the Word Processor itself. LETTERITER is a simple, easy-to-use 32-column system, without the "bells and whistles" of other programs.

But, the BUFFERITER feature is what makes it stand out. If you own a Westridge 2050 modem, and MTERM II software, you know that there is not a Text Editor feature included in the software. That's where BUFFERITER comes into play. By using LETTERITER to format your text, and saving it to tape, you can load BUFFERITER into MTERM II, and then load and transmit your textfile to another computer. BUFFERITER will send your textfile EXACTLY like you formatted it.

Also, with BUFFERITER you can receive a textfile from another computer, save it to tape, and edit or print it out with LETTERITER. If you use your modem a lot, LETTERITER/BUFFERITER is a very useful tool to have.

Next month, we will look at more Word-Processor programs, including MSCRIPT, WORD-MOST, WORD 1.5, TEXTMAN, and TEXT EDITOR 2000. Until then, keep on the lookout for more great software coming your way! TSH

A.F.R. SOFTWARE  
PRESENTS  
THREE EXTRAORDINARY PROGRAMS FOR THE  
"Timex-Sinclair"  
Computer  
"ZX/CALC"- CALCULATOR  
"ZX/TEXT"- WORD PROCESSOR  
"ZX/CALENDAR"- APPOINTMENT CALENDAR  
FOR COMPLETE DETAILS  
WRITE  
A.F.R. SOFTWARE  
1605 Pennsylvania Ave.  
# 204  
Miami Beach, Florida  
33139

SPEC-TAX- FOR TS 2068

Helps do 1984 Federal 1040,  
Schedules A,B,C,D,E,  
G,R,SE,W,2441;  
decide to itemize, average,  
file joint or separate returns.  
\$18.95

PORETSKY & PORETSKY, INC.  
521 ARGYLE RD.  
BROOKLYN, NY 11218

**Full-Size Printer Patches  
for MTERM I Software  
By Bill Ferrebee**

TASMAN Interface (courtesy of Mike Shaw)

- 1) Load Tasman Interface software. Answer questions for your brand of printer. Then press (B) to go to BASIC.
- 2) Enter the following:
 

```
DELETE 10,8000
10 CLEAR 54015
20 LOAD "" CODE
30 POKE 54205,204
40 POKE 54206,252
50 STOP
```
- 3) Run this new program, loading the MC to MTERM I in line 20. Next type:
 

```
DELETE 1,50
10 LOAD "" CODE
20 LOAD "" CODE
30 RANDOMIZE USR 54016
40 SAVE "M/I" LINE 10
50 SAVE "modem" CODE 54016,8000
60 SAVE "int" CODE 64716,652
70 STOP
```
- 4) Insert a new cassette into your recorder and enter:
 

```
GOTO 40
```

Your will have to press ENTER three times during the saving process.
- 5) Your customized MTERM I is now complete to use with the Tasman Printer Interface. Load in the same manner as normal.

AERCO Interface (courtesy of Andy Gippetti)

- 1) Enter the following program:
 

```
10 CLEAR 54015
20 LOAD "" CODE
30 POKE 54205,116
40 POKE 54206,252
50 LOAD ""
```
  - 2) Save this program on a blank cassette. Stop the cassette after saving and DO NOT rewind.
  - 3) NEW the computer, and load the MC part of MTERM I with:
 

```
LOAD "" CODE
```
  - 4) Insert your new tape and save the MC with:
 

```
SAVE "atarm" CODE 54016,8000
```

Again, stop the tape and remove without rewinding.
  - 5) NEW the computer again, and load the customized AERCO print driver software. EXIT TO BASIC and do the following:
 

```
DELETE 1,9981
9993 POKE 64263,0
9994 POKE 64264,0
9995 POKE 64265,0
9996 RAND USR 64628
9998 RAND USR 54016
```
  - 6) Insert your new tape again and type GOTO 1. You will need to press ENTER twice during the saving.
  - 7) Once this is done, your customized MTERM I is complete. To use, simply LOAD in the normal manner.
- TSH

**TS 2068 BASIC TOOLKIT**

Written in machine language expressly for those programming in BASIC on the TS 2068, the Toolkit provides 5 useful functions:

- Renumbers a program beginning at any line number, using any initial line number, in any step, up to 9999. Renumbers explicit line references of: GO TO, GOSUB, LIST, LLIST, RUN, RESTORE, and SAVE "... LINE. Also works with VAL references, e.g., GO TO VAL "1500". Lists lines containing undefined line numbers (such as GO TO a\*100).
- Lists current values of all BASIC variables: numeric and string variables, numeric and string arrays, and loop control variables.
- Finds any string of characters and lists every line containing that string.
- Replaces any string, in every line in which it is found, by any other string.
- Deletes all lines beginning with REM. Helps conserve memory and load time for operating versions of your programs.

Cassette and user information: \$19.95 ppd.

**ZEAL DISASSEMBLER for the TS 2068**

As the only full-featured machine language disassembler available for the 2068, this product has received wide acceptance since first being introduced in the final issue of SYNC magazine. The ZEAL Disassembler was favorably reviewed in the May, 1984 issue of the C.A.T.S. newsletter. It provides a unique combination of features supporting debugging and documentation of your own code and study of the TS 2068 ROM:

- Machine code routines for fast listings to screen or printer
- Zilog mnemonics: labeling of system variables; decimal addresses
- Choice of disassembly modes - normal instruction mode plus byte (DEFB) mode and word (DEFW) mode
- Resolution of relative jump addresses (for JR's and DJNZ's) to absolute addresses
- Disassembly relocation - allows code not in its normal location to be documented as if it were
- ROM bank-switching - disassembly of the extension ROM is supported
- Identification of data bytes following RST 0B's and RST 40's
- Cross-reference listings of all JP's and CALL's

Cassette and user information: \$15.95 ppd.

**J.C. KILDAY ASSOCIATES  
CENTRAL AVE., PEAKS ISLAND, ME 04108**

**WE ARE YOUR TIMEX/SINCLAIR SOURCE**

In our "HAM-HACKER"(tm) SERIES :

For the 16K ZX/TS.....  
 'MORSE/2K', \$14.95.....  
 'MINIMUF 3.5', \$17.95..  
 'SUN', \$14.95..... 'BEAM  
 HEADING', \$14.95... 'C E  
 AMP', \$19.95



For the 2068... 'MORSE/  
 Keyboard', \$14.95.....  
 'MINIMUF 3.5', \$17.95..  
 'GLOBALPLOT', \$17.95...  
 'SUN', \$14.95

\*'MORSE' also available  
 On VIC-20 & C-64 \$14.95

**COMPUTER LANGUAGES :**

ASSEM/DISASSEM, FORTH, PASCAL  
 for the 2068 -FORTH for ZX/TS

**HARDWARE : MODEMS, PRINTERS.....**

ADD \$1.00 POSTAGE/HANDLING to ALL  
 PROGRAMS, Ark. res. add 5% tax  
 --Write for free mailer--

**HAWG WILD Software™  
P.O. Box 7680 • Little Rock, Arkansas 72217**



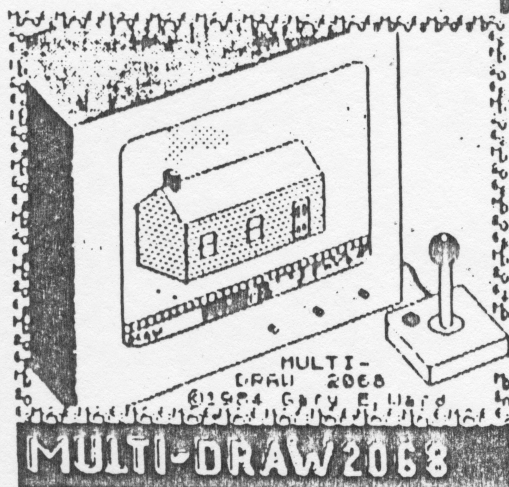
"YOUR 2068 STORE"



**KNIGHTED COMPUTERS**  
707 Highland St.  
Fulton, N.Y. 13069

"YOUR 2068 STORE"

**HARDWARE AND SOFTWARE FOR THE  
TS 2068**



The finest drawing program we've seen for the TS2068! This program allows you to draw on the screen with only the use of the joystick - change colors with the joystick - define characters with the joystick - turn on or off any pixel(s) at will and output to a TS2040 printer OR a full size printer (AERCO or TASMAN I/F). Magnify instantly. TOP SELLER - READ THE REVIEWS !! Now only \$19.95

SUPER GAMES FROM (QUICKSILVA) "The Game Lords"

The following programs operate on the TS2068 without modifications (Spectrum ROM is not needed)

XADOM (KB) - \$19.95 THE SHOWMAN (JS) - \$19.95

AQUAPLANE (JS) - \$19.95 LASERZONE (JS) - \$19.95

GRIDRUNNER (JS) - \$19.95 TRAXX (JS) - \$19.95

\* JS=Joystick Control \* KB=Keyboard Control  
For Complete descriptions of the above programs,  
see else where in this publication.

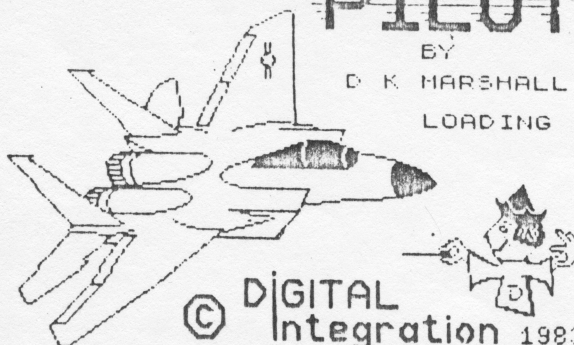
ALPHA-COM 32 PRINTER => \$59.95

**NOW FOR THE 2068**

\*\*\*\*\*  
\*\* HOTTEST SOFTWARE GOING \*\*  
\*\*\*\*\*

**FIGHTER  
PILOT**

BY  
D. K. MARSHALL  
LOADING



\*\*\*\*\*  
\*\* JOYSTICK CONTROLLED \*\*  
\*\*\*\*\*

REAL TIME F-15 EAGLE

FLIGHT SIMULATOR

- AIR-TO-AIR COMBAT TRAINING

- AIR TO AIR COMBAT

- GUN CONTROL

- ACTUAL FLIGHT TRAINING

- FOUR AIRSTRIPS

\$21.95 CASSETTE

\$24.95 WAFER (for A&J)

DEALER INQUIRIES WELCOME

\*\*\* WRITE FOR OUR FREE CATALOG \*\*\* MANY OTHER TS2068 ITEMS \*\*\*  
Add \$3.00 to total order for shipping and handling  
Use mailing address above

## KNIGHTED COMPUTERS QUICKSILVA (C)

### TRAXI from QUICKSILVA

Another awesome game from the author of Gridrunner - Jeff Menter. Fast-Action!! Capture squares for points, if you can capture all four corners of the grid, you'll have 10 seconds to eat the bugs (pursuers). NINE SPEEDS TO CHOOSE FROM... and UP TO 9 PURSUERS make for lots of high speed action and strategy. For one or two players.



==> ==> \$ 19.95

### THE SNOWMAN from QUICKSILVA

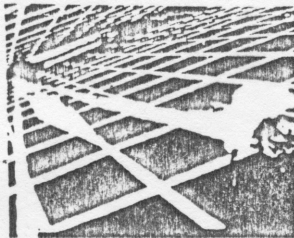
Fast moving graphics make this game truly exciting. Four stages of play. You must collect pieces of snow in order to build the snowman. Points are awarded for each piece of snow that is dropped into place. You must avoid gas flames that tend to melt your snow, pick up flashing objects to get extra points, collect ice lollies to help keep your snow from melting and watch out for the Sleep Monsters - who'll put you to sleep at the most inconvenient times - and don't fall off those ledges! Much more - interesting and FUN. (FAST) JOYSTICK CONTROL



\$19.95

### GRIDRUNNER

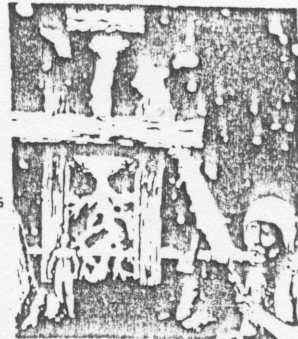
A devilishly fast arcade game that is not unlike Centipede. You control a combat ship, the GRIDRUNNER. Above you are the Gridsearch squads, caterpillar types who run in a line across each level of the grid and quickly descend to the next. If you knock off the caterpillar units one at a time and in order, you're OK, but if you split them in the middle, they become little independent units of destruction and are harder to destroy. EXCELLANT HIGH SPEED GRAPHICS--JOYSTICK CONTROL



\$19.95

### XADOM from QUICKSILVA

An arcade quality adventure game with fantastic 3D, high resolution graphics. On screen features include an inventory, score and power gauge, interactive sword fights as well as traps, treasures, monster and wizards. Choose your own level of difficulty and speed. \$ 19.95



### LASERZONE

The next in the series of Spectrum conversions of Llanasoft's AWESOMELY fast zapping arcade games for the TS2068. You're in control of the ZONE GUNNER. Faced with a choice between prolonged painful death at the hands of an enraged Liana or a rapid, glorious death wreathed in laser-fire in 6-space, what could you do but represent your race in an awesome battle of skill and dexterity? One or two players, 30 levels of play. JOYSTICK CONTROL



==>>>> \$19.95

### AQUAPLANE from QUICKSILVA

An unbelievable, original, fast moving graphics game that water-skiers (and non-water-skiers) will love. Ski through Marine Maniacs but beware of the rocks, the Regattas, the speed boats, and most especially the Great White Hungrys. The Ultimate in High Speed Graphics and a thrilling challenge. JOYSTICK CONTROL



\$19.95

DEALER INQUIRIES WELCOME

\*\*\*\*\*  
\* ALL THE ABOVE PROGRAMS HAVE BEEN CONVERTED TO RUN ON \*  
\* THE UNMODIFIED TS2068 COMPUTER - - - \*  
\* THE SPECTRUM ROM IS NOT NEEDED !!! \*  
\*\*\*\*\*

AVAILABLE FROM: Curry Computer 5344 W. Baniff Ln. Glendale, AZ 85306  
Knighed Computers 707 Highland St. Fulton, NY 13069  
TEJ Computer Pds 859 Virgil Ave Los Angeles, CA 90029  
WMJ Data Systems 4 Butterfly Dr Hauppauge, NY 11788  
Sunset Electronics 2254 Tarval St San Francisco CA 85030



# GAME SCOREBOARD

Load the program with LOAD "GS". After the initial graphics, the screen will ask "HOW MANY PLAYERS?". Respond by entering as many as you need (up to 12 without modifying the program).

Then the screen asks, "WHAT ARE THEIR NAMES?". Enter each name (up to 12 letters) followed by ENTER. After all the names have been entered, the game format comes on the screen.

As each name is shown on the screen, for example, "ENTER NEW SCORE FOR: KEN", enter the numerical score for KEN.

If the score is zero, just press ENTER. If the score is negative, key in the minus sign (SHIFT J) before keying in the number, then press ENTER. That number will be subtracted from the previous total for that player.

The screen also asks if you want to play again with the same (S) or new (N) players. By entering S or N and ENTER, the appropriate routine will be executed.

## TS 2068 VERSION

```

3 PRINT AT 7,5;"GAME SCOREBOARD"
RD: "GS"
5 PAUSE 50
10 PRINT AT 10,14;"BY"
15 PAUSE 50
20 PRINT AT 13,7;"KENDRIC C. SMITH"
MITH"
25 PAUSE 50
30 FOR X=3 TO 27
55 LET Y=4
60 GO SUB 140
65 NEXT X
70 FOR Y=4 TO 16
75 LET X=27
80 GO SUB 140
85 NEXT Y
90 FOR X=27 TO 3 STEP -1
95 LET Y=25
100 GO SUB 140
105 NEXT X
110 FOR Y=16 TO 4 STEP -1
115 LET X=3
120 GO SUB 140
125 NEXT Y
130 PAUSE 120
135 GO TO 200
140 PRINT AT Y,X;" "
145 RETURN
200 CLS
205 PRINT AT 11,7;"HOW MANY PLAYERS?"
207 PRINT AT 20,0;"KEY IN NUMBER"
R AND PRESS "ENTER"
210 INPUT Y
215 CLS

```

## FOR THE TS 2068 OR THE TS 1000

Kendric C. Smith,  
SOFTWARE SOLUTIONS  
927 Mears Court  
Stanford, CA 94305

```

220 PRINT AT 11,5;"GAME SCOREBOARD"
222 PRINT AT 20,0;"KEY IN A NAME"
E AND PRESS "ENTER"
225 DIM A$(Y,12)
230 FOR N=1 TO Y
235 INPUT A$(N)
240 NEXT N
245 CLS
250 DIM B$(Y,4)
255 DIM C$(Y,32)
260 FOR N=1 TO Y
265 LET B$(N)="0"
270 NEXT N
272 PRINT "SAME OR NEW PLAYERS?"
275 PRINT AT 2,2;"(S) SAME (N) NEW"
16;" "
280 PRINT
285 FOR N=1 TO Y
290 PRINT N;TAB 3;A$(N);TAB 17;B$(N)
295 NEXT N
300 PRINT AT 20,0;"ENTER NEW SCORE FOR:"
305 PRINT AT 21,3;"SAME OR NEW PLAYERS?"
310 FOR N=1 TO Y
315 PRINT AT 16,0;"ENTER NEW SCORE FOR:"
320 INPUT C$(N)
325 IF C$(N)="S" OR C$(N)="N" THEN GO TO 260
340 IF C$(N)="S" THEN LET C$(N)="0"
350 LET B$(N)=STR$(VAL B$(N)+VAL C$(N))
340 PRINT AT (2+(N+1)),0;N;" "
345 NEXT N
350 GO TO 310
360 SAVE "GS"
370 GO TO 1

```

## FOR THE TS 1000

Add 1 SLOW  
322 FAST

TSH

FREE LIST of new and used (but excellent condition) software, books, hardware for the TS-1000/1500 and Sharp/Radio Shack Pocket Computers. Send Self Addressed Stamped Envelope for Mel Zullenberg Camera & Computing, Dept. TSH, 21 Teleneing, Hamilton NJ 08690. For camera list too, add another postage stamp.

## 2068 TUTORIAL by Doug Gangl OPEN# and CLOSE#

Using the OPEN# and CLOSE#

Commands on the TS 2068

By Doug Gangl

Many people who use the 2068 have generally no idea what the commands OPEN# and CLOSE# are for and what they can do. These commands were intended for use with the Microdrives, but we can use them an entirely different way.

By using the OPEN# command you open up what is called a 'stream', or the line the data uses to get somewhere. You have 16 streams (0-15) which can be used. The last one (16) is for the 2068's own use.

The parameters for the OPEN# command are as follows:

OPEN#nn, a\$

where nn is any number (0-15) and a\$ is either "k", "s", or "p" ("k" being the keyboard, "s" the screen, and "p" the printer). Normally, streams 0 and 1 both point to "k", stream 2 points to "s", and stream 3 points to "p". OK, you are probably confused by now. Let me now explain what all this means in English.

For starters, I'll define more fully the meaning of the "k", "s", and "p" parameters. "k" stands for keyboard, but on your screen it's the bottom 2 lines (where all the INPUTs are and the error codes are printed). "s" stands for screen and accesses the top 22 lines of the display. "p" is your printer or data port. You can also access a stream by using "PRINT#nn;n\$" or "INPUT#nn;n\$" (or "n"). (Note: nn can only be "1" in the input case). When you do a normal PRINT, you are using stream 2 (pointing to "s"). When you do an INPUT, you are using stream 0 (pointing to "k"). And when you do an LLIST you are using stream 3 (pointing to "p").

OK. Now I'll explain how to use all this in a sensible way. For temporary use of a stream in a print command, use a PRINT# statement. PRINT#3 will go to the printer, PRINT#3 or 1 will go to the bottom 2 lines of your screen. Incidentally, an LPRINT command does the exact same as the PRINT#3 command did.

Here's how the computer translates the commands you give it:

LPRINT same as PRINT#3

PRINT same as PRINT#2

You use an OPEN# command to permanently open

up a stream (until you close it). If you are typing in a program and you want to test it out, and say it has some parts where it prints data out to a printer (like a word processor), and you don't want to waste printer paper.

OPEN#3, "s"

This will now make all the commands using stream 3 (LLIST and LPRINT) go to the screen. Or, if you want to do the reverse and you want everything to go to the printer instead of the screen, you do:

OPEN#2, "p"

This will send all the data that is supposed to go to the screen to the printer.

If you want to open up a stream for your own use, you can:

OPEN#nn,a\$

So, if you want to use stream 4 to go to the printer, you just OPEN# it up and tell it to go to the printer with "p".

Finally, if you want, lets say stream 2 to return to normal (after you made it go to the printer), just do:

CLOSE#2

This will close it up and return it to normal.

Commands using stream 0 or 1 ("k")

INPUT

Commands using stream 2 ("s")

PRINT

LIST

Commands using stream 3 ("p")

LPRINT

LLIST

Equals:

LPRINT = PRINT#3;

LLIST = OPEN#2, "p":LIST

PRINT = PRINT#2;

LIST = OPEN#3 "s":LLIST

PRINT = LPRINT#2;

Go ahead an experiment with these commands. They can be very useful in your programs. TSH



# MORE PROGRAMMING TIPS FOR THE T/S1000 By Mather White

## UnLISTable REM lines

Leave two extra spaces in the REM line at 16514-5. Then POKE this in:

POKE 16514,118  
POKE 16515,118

Now POKE your MC in, starting at 16516. This will cause only the 1 REM part of the line to be seen when the line is LISTed. (I recommend a POKE 16510,0 to prevent deletion of the MC line.)

## Tape Unlocker

Prepare recorder to LOAD the auto-RUN program you want to break into.. Type:

FAST and then  
RAND USR 836 to LOAD the program.  
When the report code c/o appears, the program is in, and you may do whatever you like with it, e.g., make a backup copy. Try this with a program like "Mazogs." (Special thanks goes to Mike Minutoli for the above two tricks.)

## Free MC Storage

If your memory is really cramped for MC or data storage space, e.g., a 1K ZX81, you can use the PRBUFF, which starts at 16444 and runs to 16476 (leave 16476 a 118). Disadvan-

tages of using this area are that it will be erased at the end of a program run and when COPY or LPRINT are used. You could manage it by typing in the program which would POKE in the data. This area could also be used for password protection, since it will be erased if break is pressed. Other free storage space is at 16417 and 16507-8.

## T/S 1000 Clock

Did you know your T/S 1000 has a built-in clock? It does, and here's how to use it. Locations 16436-7 contain the screen frame display count, which counts each 60th of a second. When you want to start the clock, use:

nn POKE 16436,0  
nn POKE 16437,128

If you want to stop the clock, switch into the FAST mode. When you want to start it again, switch back to SLOW. The clock will count up to 9 minutes, 6 7/60 seconds before resetting to zero. To find out what time it is, use:

PRINT (32768-PEEK 16436-256\*PEEK 16427)/60;  
seconds elapsed  
PRINT(32768-PEEK 16436-256\*PEEK 16437)/3600;  
minutes elapsed

## Extra Op Codes for MC programmers

Here are some extra Z80 opcodes that you most likely have not read about. They require a special prefix which takes an H or L instruction and uses it on the 1X or 1Y registers. Hex DD is used to reference the 1X register, and FDH for the 1Y register. For example:

OFDH ;special prefix for 1Y  
LD C,L ;now moves low byte of 1Y into C

There is another special instruction I called DUBI. It takes the register referred to,

doubles it, and then increments it by one. Zilog does not test these opcodes during production of the Z80 CPU, so for a small number of you, some of these instructions may not work. The T/S 1000's display also restricts the use of the 1X and 1Y registers. The contents of the 1Y register must be 4000H upon RETURN to BASIC, and the 1X register may only be used in the FAST Mode. Here is a summary of the extra opcodes. In the tables, the H and L prefixes refer to the high order byte of the 1X or 1Y register, and the low order byte, respectively.

MNEMONIC	OP CODE	MNEMONIC	OP CODE	MNEMONIC	OP CODE
DUBI A	CB37	LD LIX,A	DD6F	LD A,H1Y	FD7C
DUBI B	CB30	LD LIX,B	DD68	LD B,H1Y	FD44
DUBI C	CB31	LD LIX,C	DD69	LD C,H1Y	FD4C
DUBI D	CB32	LD LIX,D	DD6A	LD D,H1Y	FD54
DUBI E	CB33	LD LIX,E	DD6B	LD E,H1Y	FD5C
DUBI H	CB34			LD A,L1Y	FD7D
DUBI L	CB35	LD A,H1X	DD7C	LD B,L1Y	FD45
DUBI(HL)	CB36	LD B,H1X	DD44	LD C,L1Y	FD4D
		LD C,H1X	DD4C	LD D,L1Y	FD55
		LD D,H1X	DD54	LD E,L1Y	FD5D
		LD E,H1X	DD5C		
LD HIX,A	DD67	LD A,LIX	DD7D	LD H1X,L1X	DD65
LD HIX,B	DD60	LD B,LIX	DD45	LD L1X,H1X	DD6C
LD HIX,C	DD61	LD C,LIX	DD4D	LD H1Y,L1Y	FD65
LD HIX,D	DD62	LD D,LIX	DD55	LD L1Y,H1Y	FD6C
LD HIX,E	DD63	LD E,LIX	DD5D		

MNEMONIC	OP CODE
LD H1Y,nn	FD26nn
LD L1Y,nn	FD2Enn
LD H1X,nn	DD26nn
LD L1X,nn	DD2Enn

ADD A,H1Y	FD84
ADD A,L1Y	FD85
SUB A,H1Y	FD94
SUB A,L1Y	FD95

ADD A,H1X	DD84
ADD A,L1X	dd85
SUB A,H1X	DD94
SUB A,L1X	DD95

INC H1X	DD24
INC L1X	DD2C
INC H1Y	FD24
INC L1Y	FD2C

AND H1X	DDA4
AND L1X	DDA5
AND H1Y	FDA4
AND L1Y	FDA5

XOR H1X	DDAC
XOR L1X	DDAD
XOR H1Y	FDAC
XOR L1Y	FDAD

DEC H1X	DD25
DEC L1X	DD2D
DEC H1Y	FD25
DEC L1Y	FD2D

OR H1X	DDB4
OR L1X	DDB5
OR H1Y	FDB4
OR L1Y	FDB5

CP H1X	DDBC
CP L1X	DDBD
CP H1Y	FDBC
CP L1Y	FDBD

ADC A,H1X	DD8C
ADC A,L1X	DD8D
ADC A,H1Y	FD8C
ADC A,L1Y	FD8D

SBC A,H1X	DD9C
SBC A,L1X	DD9D
SBC A,H1Y	FD9C
SBC A,L1Y	FD9D

LD H1Y,A	FD67
LD H1Y,B	FD60
LD H1Y,C	FD61
LD H1Y,D	FD62
LD H1Y,E	FD63

LD L1Y,A	FD6F
LD L1Y,B	FD68
LD L1Y,C	FD69
LD L1Y,D	FD6A
LD L1Y,E	FD6B

TSH

# CURRY COMPUTER

## YOUR COMPLETE TIMEX/SINCLAIR SOURCE

1000/1500

2068

All QUICKSILVA Titles 5.00  
 Plenty of TIMEX Brand 4.50  
 \*ROCKET MAN and FORTY NINER  
 are absolute musts! HiRes  
 Graphics with no modification  
 .....10.95  
 Textwriter 1000 11.95  
 FileSixty Keyboard 12.95  
 MINDWARE Printer 29.95+  
 1500 Computer 74.95+  
 L1000 Sting. Floppy 169.95+

### MISC.

2040 Printer 69.95+  
 Printer Paper 6.95-  
 2050 Modem 119.95+  
 Compuserve Start. Kit 29.95-  
 Axiom SLP NLQ Printer 269.95+

### BOOKS

Beg./Int. Guide 9.95  
 Int./Adv. Guide 9.95  
 Intro the Sinclair QL 10.95  
 Working 2068 9.95  
 Essential Guide 9.95  
 Exp. The QL 10.95  
 QL Games Compendium 12.95  
 Intro to SuperBASIC 10.95  
 Adv. BASIC Prog. on QL 10.95  
 Word Process. on the QL 10.95  
 Desk Top Compt. w/t QL 10.95

Write for FREE Catalog

No Shipping on Software  
 + \$3.95 Shipping  
 - \$1.00 Shipping  
 \* \$0.75 Shipping  
 COD \$2.00

Sorry No Credit Cards  
 CURRY COMPUTER  
 5344 W. Banff Ln.  
 Glendale, AZ 85306  
 1-602-978-2902  
 MCI # 126-7701

Auto Analyzer 9.95  
 Math Wizardry I 9.95  
 Spelling I 8.95  
 States + Caps 9.95  
 Checkbook Mgr 8.95  
 Crossfire 8.95  
 States + Caps Cart. 9.95  
 Casino I Cart. 9.95  
 All QUICKSILVA 18.95  
 Full Line of SHARPS 20.95  
 Full Line of TEXTWRITERS  
 Tasword II 49.95  
 Taspriint 19.95  
 Masterfile 24.95  
 ROM Switch 56.95-  
 Aerco Cent. I/F 69.95-  
 L2000 String. Floppy 199.50+  
 ZLINK Spectrum Interf. 49.95

### SPECTRUM

Beach Head 17.95  
 Sherlock Holmes 24.95  
 Jet Set Willy 14.95  
 The Hobbit 24.95  
 Lode Runner 16.95  
 D. Thompsons Decathlon 15.95  
 Deus Ex Machina 25.95  
 Matchpoint 16.95  
 Ant Attack 14.95  
 Fred 14.95  
 Snowman 14.95  
 Great Space Race 24.95  
 Sabre Wulf 18.95  
 Omnicalc2 24.95  
 Hunter Killer 18.95  
 Manic Miner 14.95  
 Gift From The Gods 19.95

PROTEK Spectrum Gift 39.95  
 (Interf+Joystick  
 + game )

\* 1000  
 \* 1500  
 \* ZX81

## CACTUS SOFTWARE

\* 2068  
 and now:  
 \* SPECTRUM

THE PLACE TO FIND GOOD SOFTWARE  
 AT A LOW PRICE!!!!

**NEW!!** Character sets for the TS 2068! 3 different character sets to replace the 'BLAH' ones on your 2068. Choose from: Space Age, Hi-Tech, and Gothic. All MCs and can be relocatable. \$4 each or all 3 for only \$10!!

**NEW!!** Mega-Drew is here for the Spectrum!! Commands like: fill, arc, box, and also ability to print on the screen in 4 different fonts!! Write for price!!

**NEW!!** Buy 2 TS 1000 programs and get the third of your choice FREE!! This goes into effect 2-1-85. Send SASE for catalog to:

CACTUS SOFTWARE  
 3754 E. Desert Cove Ave.  
 Phoenix, AZ. 85028



# BANK SWITCHING PART 8 (conclusion)

by Paul Hunter

## BANK SWITCHING -- VIRTUAL MEMORY

This is the last instalment of this series and we'll start with some improvements and corrections to the listing provided last month. I decided that some routines to save (and reload) bank data on tape should be included within the 2K operating system. These are necessary for back-up and because the memory in most banks is volatile. If you have a mass-storage device other than a cassette recorder similar procedures can be used.

The trouble, of course, was that there was not much room left in the 2048 bytes. It would have been possible to spill over into the next 2K block but that would have precluded fitting the whole thing in a single 2716 EPROM.

So some squeezing was necessary and as a result some of the prompts (which take up over 25 percent of the space) were shortened or combined. Other changes are: an error in the pack routine (which occurred when an empty bank was packed) has been corrected; the bank-change routine has been separated from the main program so that it can be called separately; and a new routine to determine the extent to which a bank is used has been included.

Those sections that have been changed are reprinted with starting and ending addresses in Figure 1. The entire memory map is listed in Figure 2. The various character strings are printed in Figure 3 and the BSOS system variables and their addresses are listed in Figure 4.

## POINTS ARISING

Those of you who have modified the computer continuum board as described in an earlier part may find that the interface works better without the 4.7K pull-up resistor on the RMCS' line.

In the operating system currently described, the keybounce delay parameter is stored at 49118. The default value is stored at 8223. If you find that the delay is too short and that you are typing multiple characters then increase the value (to 16 or 20 for example). For a permanent change alter the default value at 8223. For a particular application change only the value in 49118.

## HOW TO SAVE AND RELOAD A BANK

If you load the operating system from the cassette tape (2 minutes) the following things happen automatically: 1. RANTOP is reset to 49110 (USR 8195); 2. The operating system (BSOS) is transferred from a REM statement at line 10 to the 8-10K block (USR 8966); 3. The directory is loaded from the string variable AS to the 48-64K bank currently enabled (USR 9539); and 4. The system variables at 49110-49151 are set to their default values and the directory is brought down and displayed with the menu (USR 9720). If you load the program (listed last month with this month's changes) by hand, then subsequent loads from cassette can be done in much the same way.

The time will come when you will want to save the programs or data in a bank on cassette tape (back it up!). Use a program such as this:

```
9010 CLEAR
9020 DIM A$(VAL "USR 8565")
9030 RAND USR 10223
9040 STOP
9050 RAND USR 8195
9060 RAND USR 9539
9070 RAND USR 9720
9080 STOP
9090 SAVE "BANK"
9100 GOTO 9050
```

You can store this program in the bank -- then calling it down into the system will cause it to run automatically up to line 9040. (First the variables are cleared; then a string variable AS is dimensioned to a size equal to the

amount of bank actually used; then the bank is dumped into the string variable.) If you print AS at this point you will see the beginning of the bank -- the directory -- on the screen. In some cases the program will load but will not autorun -- in this case initiate the procedure by GOTO 9010.

Now start the recorder and execute GOTO 9000 (do not use RUN). The bank will be saved on tape together with whatever program was resident in RAM. The GOTO 50 statement in line 9100 ensures that the program will autorun upon reloading. When reloaded, the program resets RAMTOP, reloads the bank, and brings down the directory as described earlier.

#### VIRTUAL MEMORY -- SOME EXPERIMENTS WITH BSOS

The possibility of boundless variables space, or larger-than-16K programs running automatically, was mentioned last month. Limitless memory addressed within a limited space is called "virtual memory". What happens is that program segments are brought into the addressable space when they are required and then taken out when their job is done. The same with data. Such manipulations in a sophisticated virtual system are transparent to the user.

The routines necessary for the operation of a virtual memory system are included in the BSOS -- so now you can

Changes in the operating system  
Make the changes in the order listed  
Ranges are inclusive

FIGURE 1

8565-8577	205 35 15 205 132 33 124 6 192 144 71 77 201
8638	14
8641-8642	101 34
8818-8841	data shifted up one address; 8818 becomes 0
8966-8977	33 130 64 17 0 32 1 0 8 237 176 201
8986	115
9463-9517	new string: FILE WILL BE FLAGGED(PACK TO DELETE)(F)LAG OR (U)NFLAG?
9518-9538	205 224 37 205 90 32 1 95 28 144 230 3 60 23 23 129 79 237 121 201
9552-9636	data shifted up three addresses to 9555-9639
9539-9554	42 16 64 1 6 0 9 17 0 192 1 0 64 237 176 201
9640-9667	62 118 215 1 20 0 17 247 36 205 107 11 62 118 215 215 1 16 0 205 107
	11 62 118 215 215 1 19
9680	83
9947	168
9990	61
10027	24
10089	89
10031-10036	5 205 46 37 24 15
10054-10178	data shifted down 17 addresses to 10037-10161
10180-10199	data shifted down 18 addresses to 10162-10181
10182-10185	151 190 40 27
10200-10224	data shifted down 14 addresses to 10186-10210
10211-10222	24 225 225 205 35 15 205 106 32 195 0 32
10223-10239	205 117 33 17 6 0 42 16 64 25 17 0 192 235 237 176 201

run ZXPFILE with a huge data base or run a program up to 80K bytes in length if you have the full complement of 4 banks. Even if you have only a 64K RAM pack some of these techniques are useful. Let's look at a fairly simple way to implement a virtual memory system on a 64K TS1000/ZXB1. Bear in mind that you cannot normally duplicate line numbers so let's assign the 9000 to 9999 range as changeable. Note also that you must segment your program and write the pieces with due regard to global vs. local variables. This example is trivial -- the program is not of sufficient size to require breaking up -- but it is intended to illustrate the possibilities with much larger programs.

Put the following two subroutines in the bank. We'll end each subroutine with a RETURN statement although you can, if you wish, use two GOTO statements in place of the GOSUB and RETURN.

#### Subroutine C DEC-TO-HEX

```

9000 DIM A$(4)
9010 LET N=VAL N$
9020 LET M=INT (N/256)
9030 LET L=N-256*M
9040 LET A$(1)=CHR$(28+INT (M/16))
9050 LET A$(2)=CHR$(28+M-16*INT (M/16))
9060 LET A$(3)=CHR$(28+INT (L/16))
9070 LET A$(4)=CHR$(28+L-16*INT (L/16))
9080 PRINT "DECIMAL "N;" IN HEX IS "A$
9090 RETURN

```

#### Subroutine D HEX-TO-DEC

```

9000 LET A=CODE N$(1)-28
9010 FOR N=2 TO LEN N$
9020 LET A=16*A+(CODE N$(N)-28)
9030 NEXT N
9040 PRINT "HEX "N$;" IN DECIMAL IS "A
9050 RETURN

```

These two routines translate a number from a decimal to a hexadecimal base and vice versa. The directory should look like:

```

BANK 1 DIRECTORY
=====
NO.   NAME      .EXT  ADDR  SIZE
----  -
A:  DIRECTORY  .DIR:49152:00704;
B:  SAVEROUTINE.PRG:49856:00135;
C:  DEC-TO-HEX .PRG:49991:00308;
D:  HEX-TO-DEC .PRG:50299:00134;
E:
F:
G:
H:
I:
J:
K:
L:
M:
N:
O:
=====
1:SAVE 3:PURGE 5:PACK 7:ROOM
2:LOAD 4:RECLAIM 6:BANK 8:QUIT

```



Now enter a main program such as:

```

5 REM LN 775C7LN ** FOR EWRNDLN 7YC70A
10 CLS
20 PRINT AT 8,0;"DECIMAL-HEX CONVERSION"
30 PRINT AT 11,0;"ENTER ""H"" FOR DECIMAL TO HEX"
40 PRINT AT 12,0;"ENTER ""D"" FOR HEX TO DECIMAL"
50 PRINT AT 13,0;"ENTER ANY OTHER KEY TO QUIT"
60 INPUT R$
70 IF R$="H" THEN POKE 16531,40
80 IF R$="D" THEN POKE 16531,41
90 IF R$<>"H" AND R$<>"D" THEN STOP
100 PRINT AT 16,0;"ENTER NUMBER TO CONVERT:"
110 INPUT N$
120 PRINT
130 GOSUB 8990
140 SLOW
150 PRINT AT 20,0;"PRESS ANY KEY TO CONTINUE"
160 IF INKEY$="" THEN GOTO 150
170 GOTO 10
8990 RAND USR 16514

```

```

16514 205 35 15 CALL FAST
16517 33 40 35 LD HL 9000
      205 216 9 CALL LINE-ADDR
      235      EX HL DE
      42 12 64 LD HL D FILE
      205 93 10 CALL RECLAIM-1
16530 62 40      LD A file #
      195 156 38 JP 9884

```

A routine to switch banks can be incorporated at the beginning (LD A bank#; CALL 9524) so that files may be recovered from any designated bank. The byte at 16531 is poked in the BASIC program lines 70 and 80. The byte poked in is the code for the letter for the required subroutine in the directory. For example, if 'H' is entered when the main program is run, then the DEC-TO-HEX routine is required, and this subroutine is C in the directory. So the code for C, or 40, is poked in line 70. In your own program the data byte poked could of course be a variable.

FIGURE 2 MEMORY MAP

Address	Routine	Hex	Description
8195	SET-RANTOP	2003	Sets RANTOP to 49110
8224	TOT-SPACE	2020	Determines space available in system
8235	PRG-SPACE	202B	Determines space available for program
8246	FILE-SIZE-1	2036	Determines size of a file in the system
8255	FILE-SIZE-2	203F	Determines size of file other than displ
8268	MOVOUT	204C	Moves a file from system to bank
8282	KEYBOARD	205A	Scans keyboard and puts value in A
8298	DSP-OUT	206A	Moves display file from system to bank
8317	TOT-IN	207D	Loads an entire system from bank
8331	PRG-IN	208B	Loads a program from bank into system
8353	CLR-REQUEST	20A1	Clears the name-string buffer
8360	PRT-NAMESTR	20AC	Prints the name-string buffer
8397	INP-NAMESTR	20CD	Inputs name-string from keyboard
8453	VAR-IN	2105	Loads variables file into system
8475	STR-TO-BC	211B	Finds value of a numeric string
8486	TIMEDOUT	2126	Delay loop
8565	BYTES-IN-BANK	2175	Determines amount of bank in use*
8580	FIND-BANKEND	2184	Finds first free byte in bank
8622	FILE-TYPE	21AE	Determines file type
8631	PRT-ROOM	21B7	Prints available space in bank
8653	ROOM-LEFT	21CD	Calculates space available in bank
8665	PRINT-HL	21D9	Prints value in HL
8667	PRINT-BC	21DB	Prints value in BC
8674	ENTER-DATASTR	21E2	Puts data string into directory
8693	DSP-IN	21F5	Loads display file into system
8712	PRT-ADDR/SIZE	220B	Prints file bank address and size
8966	BSOG-LOAD	2306	Loads BSOG from REM statement to 8-10K
8978	PRT-PROMPT	2312	Prints prompt message on screen
8995	PRT-CONFIRM	2323	Prints confirmation request
9009	PRT-OVERFLOW	2331	Prints 'not enough room' message
9023	PRT-INVALID	233F	Prints 'invalid extension' message
9037	SET-VARLMTS	234D	Sets limits for variables save
9049	SET-TOTLMTS	2359	Sets limits for system save
9060	SET-PRGLMTS	236A	Sets limits for program save
9071	LOAD-LMTS	236F	Loads file-start and file-end variables
9081	PRT-RANGE-1	2379	Prints line range prompt 1
9094	PRT-RANGE-2	2386	Prints line range prompt 2
9104	ENTER-LINEND	2390	Inputs line number from keyboard
9148	SIZE-TO-BC	23BC	Puts size of stored file into BC
9155	START-OF-LINE	23C3	Determines address of first byte of line
9164	END-OF-LINE	23CC	Determines address of last byte of line
9175	RANGE-LMTS	23D7	Sets limits for line range save
9298	PRT-SAVE	2452	Prints 'save' message
9311	PRT-LOAD	245F	Prints 'load' message
9384	PRT-FILENO	24A8	Prints prompt for file number
9411	PRT-REF	24C3	Prints 'no file found' message
9425	FIND-FILE	24D1	Finds address of designated file in bank
9449	PRT-NOROOM	24E9	Prints 'no room' message
9518	BANK-CHANGE	252E	Changes banks
9539	BANK-LOAD	2543	Transfers bank from AS to 48-64K
9640	PRT-PURGE	25A8	Prints prompt for purge routine
9673	PRT-RECLAIM	25C9	Prints reclaim message
9696	PRT-BANK	25E0	Prints bank change prompt
9720	MAIN	25F8	Initialization / directory display
9752	SAVE	2618	1. Save
9863	LOAD	2687	2. Load
9946	PURGE	26DA	3. Purge
9995	RECLAIM	270B	4. Reclaim
10032	BANK	2730	6. Bank
10046	ROOM	273E	7. Room
10058	PACK	274A	5. Pack
10223	BANK-SAVE	27EF	Transfers bank from 48-64K to AS

FIGURE 4 SYSTEM VARIABLES

Address	Name	Hex	Description
49110	FILE-START	BFD6	System address of start of file
49112	FILE-END	BFD8	System address of end of file
49114	STORE-LOC	BFDA	Storage location of file
49116	PRINT-POS	BFDC	Print position on screen (line/col)
49118	DELAY	BDF4	Delay parameter for keyboard debounce
49120	FIRST-BYTE	BFE0	First free byte in bank
49122	DIR-ENTRY	BFE2	Address for next entry in directory
49124	DATA-STRING	BFE4	String containing directory entry data
49136	FILE-TYPE	BFF0	First letter of file extension

FIGURE 3 CHARACTER STRINGS

Address	Character string
8496	ENTER "FILENAME.EXT";
8517	EXECUTE SAVE (S) OR ABORT (A):
8547	ADDRESS:
8556	SIZE:
8795	NOT ENOUGH ROOM IN BANK
8819	PRESS ANY KEY TO CONTINUE
8843	ENTER THE LINE RANGE OR ENTER (A)LL FOR THE ENTIRE PROGRAM
8903	FIRST LINE OR (S)TART:
8926	LAST LINE OR (E)ND:
8949	INVALID EXTENSION
9244	SAVE A FILE
9255	LOAD A FILE
9266	CHANGE BANKS
9278	ENTER BANK REQUIRED:
9324	ENTER LETTER (A TO O) OF FILE: "Z" WILL REDISPLAY DIRECTORY
9398	NO FILE FOUND
9463	FILE WILL BE FLAGGED
9483	(PACK TO DELETE)
9499	(F)LAG OR (U)NFLAG?
9555	RECLAIM PART OF SYSTEM
9575	ENTER V TO CLEAR ALL VARIABLES OR P TO CLEAR (PART OF) PROGRAM

At line 130 the subroutine at 8900 is called. The TSR call in line 8900 executes the code in the RRM statement — it calls FAST, clears 9000-9999, and loads the required subroutine from the 48-64K bank. The subroutine itself is then executed and eventually a return is made to the main program at line 140. A important thing to remember is to do all transfers to and from the bank in FAST mode (the call for FAST mode is incorporated in the TSR call for this reason).

Run the program and try a few examples. You will see that the exchange of subroutines (although admittedly they are quite small in this example) happens so quickly as to be unnoticeable. If you list the program after trying the hex-decimal conversion in each direction you will see that indeed the program lines 9000-9090 do change. The ability of a program to change itself depending upon what is required of it imparts a suggestion of intelligence to its operation.

TSH

WMJ Data Systems will be publishing "Quarlers" a publication supporting the Timex-Sinclair computer user. This publication will be published quarterly starting with the Winter 85 issue to be mailed during January 1985.

Quarlers will provide reviews of products, new product news, articles of interest, and total support to the T-S user.

Subscription to Quarlers is only \$3.00 per year. Satisfaction is guaranteed.

Please make checks payable to:

WMJ DATA SYSTEMS

Dept. Quarlers

4 Butterfly Drive  
Hauppauge, New York 11788

SUBSCRIBE NOW - DON'T DELAY!!!



## The Sinclair/Timex User's Magazine

Hardware Projects • Hardware Reviews  
Software Reviews • Product Comparisons  
Published Monthly • Back Issues Available  
Free Personal Ads for Subscribers

SUM Magazine is aimed at Sinclair and Timex users who want to learn what is available for their computers, how to do things no one else is doing, and what is just over the horizon. Examples of recent articles include: Building your own Spectrum Emulator; an extensive series of reviews on word processors for the 2068; adding an RGB monitor to your 2068; and a series on repairing your TS1000 and ZX81 computers.

SUM Magazine invites articles, reviews, and projects for possible publication. We pay for articles published! Hardware and software producers are invited to submit their products for review.

Annual Subscription ..... \$12

Free Sample Copy on Request

SUM Magazine

3224 NW 30 Avenue — Gainesville, Florida 32605



## Reviews

"Winky Board 2000"  
By Bill Ferrebee

PRODUCT: WINKY BOARD 2000  
DISCRIPTION: Cassette/Computer Interface  
PRICE: \$22.95  
AVAILABLE FROM: G. RUSSELL ELECTRONICS  
R.D. 1, Box 539  
Centre Hall, PA 16828

You know by now that there are many, many software packages available for the TS 2068. And with the advent of the various Spectrum conversion kits, even more will be at your disposal. This helps to make the loss of Timex bearable. As long as there is software out there to use, we will be happy.

But what about the problem we face loading this software? You also know that all T/S computers are somewhat stubborn, even finicky when it come to loading cassette software. You start to load a new piece of software, and you get the "Tape Loading Error" message.

Yes, there are Disk Drive systems available, but for now there is next to nothing available on disk. You have to load from cassette, and save to disk yourself. And, many people can not afford the cost of the Disk Drive systems, so they will be staying with the cassettes.

There is an inexpensive product that will help you to load any stubborn cassette, and also allow you to make backup copies of any TS 2068 or Spectrum software. (It IS legal to make backup copies...but not to sell them!)

The WINKY BOARD 2000 from G. Russell Electronics is a small load filter board that plugs into your line between the 2068 (or ANY T/S computer) and your cassette player. It contains 2 LEDs, for indicating load levels, and the necessary components to clean up the line for better load levels.

I have been using my WINKY BOARD for about 2 months, and have had great success with it. If you have a second cassette recorder, you can use the WINKY BOARD to make backup copies at the same time you load them into your computer. Even Machine Code programs are a snap to copy!

G. RUSSELL ELECTRONICS seem to be on the forefront of T/S electronics. They are the producers of the famous ROMSWITCH, that allows you to have 2 computers in one, and the SRS (Speech Recognition System), that allows you to "talk" to your computer! I will be reviewing these other products from G. RUSSELL in the next few months.

## TS 2068 REVIEW "Badgammon"

This is a very good version of the game "Backgammon" for the TS 2068. It is not just an "upload", from the TS 1000, but has full color and sound (and may I add that the sound is really quite neat and makes the game more fun to play!). The playing pieces are drawn out in hi-res graphics. All the rules of backgammon are built in (so you can't cheat!).

The computer is also very quick at making its decisions. It does not take forever like the Timex version for the TS 1000 did. The game plays very smoothly and the computer gives you at least half a chance to win (not like other games where the computer wins ALL the time and you get so frustrated that you want to quit!). I really like "Badgammon". It is now one of my favorite games! I very highly recommend it to all people who are just sick and tired of playing arcade games. It is a nice change. And I would give this program a 5 star rating!

Order from:  
\$19.95 (plus \$1.00 for shipping)  
Foote Software  
P.O. Box 14655  
Gainesville, Florida 32604-4655  
(904) 462-1086

TSH

Addressing

4.3.3

Address Storage and Retrieval

For the TS 2068

ASR will hold up to 320 names, addresses and phone numbers. It will search by last name, city, state or by the zip code. It will list all addresses it finds on the screen or if you have one, you can do labels on your printer. The new 2068 version of ASR will also alphabetize all addresses by last name.

ASR for the TS 1000 or ZX81 16K as seen in TS Horizons number 7, is still available.

ASR for the TS 1000: \$5

ASR for the TS 2068: \$10

Both programs are on cassette and include instructions. Please Specify.

Send to: John Marion

40 63 Box 550

Greenup, KY 41144

## 2068 SOFTWARE REVIEW

Tex Faucette

ACZ GENERAL LEDGER 2,000 Copyright (c)1984 by Alan R. Czarnek  
Cottage Technology, 5720. W. Little York,  
Suite 178, Houston, Texas 77091

ACZ GENERAL LEDGER 2,000 is designed to run on the T/S 2068 with the T/S 2040 printer. An option is provided for use of a CARDCO numeric keypad utilizing either of the T/S joystick ports. Note that the CARDCO (originally designed for the Commodore 64) from any source may be used, but the key labels will not be correct. A customized version for the T/S 2068 may be obtained from Cottage Technology.

The program is designed to produce the most important financial reports required by a small business at minimum expense. A "setup" program is first utilized to prepare a "Financial Statements" tape and two "data" tapes which are then used with the main program (in response to menu prompts) to save data or generate account charts, income statements, trial balance sheets, ledger details, etc. Once this "system setup" procedure is performed, it is a simple matter to add new account numbers within the established categories.

Converting from a manual ledger system should present no problems. Account numbering determines the category of each account. 100-199 are "Assets", 200-399 are "Liabilities", etc., with valid account numbers ranging from 100 to 599. "Offset" accounts may be utilized, i.e., Account # 290, Petty cash may be related to # 101 Cash.

ABLE BAKERY INC.

## FIG. 1 CHART OF ACCOUNTS

101	Cash
102	Acct Rec
103	Inventory
104	Truck
105	Equipment
106	R/P Trade
107	R/P Other
108	Salary Pay
109	Federal Tax
110	1st Nat'l
111	2nd Nat'l
112	Petty Cash
113	Allow B/D
114	Acc Depr
115	Acc Depr
116	State Tax
117	Common Sto
118	Dividends
119	Ret'd Mar
120	Sales
121	C of G S
122	Sal Exp
123	Truck Depr
124	Truck Rep
125	Truck Ins
126	Store Ins
127	Utilities
128	Rent Exp
129	Dep Exp
130	Bad Debt

ABLE BAKERY INC.  
INCOME STATEMENT  
For The Period Ending 03/31/85

SALES		
Sales	25076.29	
TOTAL		25076.29
LESS EXPENSES		
Cost of Goods		
C of G S	15045.60	
TOTAL		15045.60
Salaries Exp		
Sal Exp	2732.40	
TOTAL		2732.40
Truck Expense		
Truck Depr	270.61	
Truck Rep	237.80	
Truck Ins	375.16	
TOTAL		883.57
Store Occupancy		
Store Ins	137.27	
Utilities	623.92	
Rent Exp	1719.46	
TOTAL		2480.65
Other Expense		
Dep Exp	449.23	
Bad Debt	250.76	
TOTAL		699.99
TOTAL EXPENSES		21842.21
NET INCOME (LOSS)		3234.08

ABLE BAKERY INC.  
TRIAL BALANCE  
03/31/85

ACCT #	DR	CR
101	9216.21	
110	5376.34	
115	10609.09	
120	16237.00	
121	27108.63	
122		6219.95
123		925.70
124		16009.00
125		927.00
126		1043.06
127		4627.97
128		10883.66
129		325.16
130		15000.00
131		10909.66
132		25076.29
133	15045.60	
134	2732.40	
135	270.61	
136	237.80	
137	375.16	
138	137.27	
139	623.92	
140	1719.46	
141	449.23	
142	250.76	
TOTAL DR =	\$ 91939.48	
TOTAL CR =	\$ 91939.48	

FIG. 2 3 SAMPLE REPORTS  
PRODUCED BY ACZ GENERAL LEDGER

FIG. 1 CHART OF ACCOUNTS.  
PROGRAM DID NOT SCROLL, SO ALL  
AFTER 14 WAS ENTERED "BLIND"



## 2 Books of Games:TS 1000 - - Mather White

**CRUNCHERS:** 21 Simple Games for the Timex/Sinclair 1000 2K  
1983 by Yin Chiu and Henry Mullish  
McGraw-Hill Book Company, New York  
137pp.(spiralbound), \$8.95

This book is oriented toward the beginning programmer. The first couple chapters tell about setting up the computer, using the keyboard, and basic BASIC statements (PRINT, etc.). It contains 21 simple and easy-to-use games with line-by-line explanations and possible adaptations of each. The games are short, easy to modify and expand because of the helpful explanations, and are good gaming ideas.


Most of the games are the "shoot-em-up" type, though each one has a different style and format. Other games included are casino and card games, and screen drawing games. I would recommend this book to programmers who would like to start a game collection or design their own games, because of the good gaming ideas and nice explanations.

51 Game Programs for the Timex Sinclair 1000 and 1500

By Tim Hartnell  
Signet New American Library  
1633 Broadway.  
New York, NY 10019  
205 pp.(paperback), \$2.50

This book contains a wide range of game programs for T/S computers, ranging from Breakout to Tic Tac Toe to Poker. Each game has basic instructions for it, followed by the program listing. The length of the programs range from nine lines to the 14K Poker game. Most require the use of the 16K Rampack.

Quality of the games ranges from very questionable to very good, although most are good. The major divisions of the book are: moving graphic games, board games and simulations, card games, brain games, and word and letter games. Overall, this book is well worth the price if you have the patience to type the games into the computer. TSH

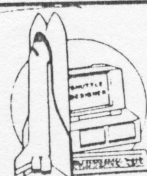


*"...received my moneys worth with just one issue..."*  
—J. Trenbick

*"...always stop to read CTM, even though most other magazines I receive (and write for) only get cursory examination..."*  
—Fred Blechman, K6UGT

U.S.A.	\$15.00 for 1 year
Mexico, Canada	\$25.00
Foreign	\$35.00(land) - \$55.00(air)
(U.S. funds only)	
Permanent (U.S. Subscription)	\$100.00
Sample Copy	\$3.50

**CHET LAMBERT, W4WDR**  
1704 Sam Drive • Birmingham, AL 35235  
(205) 854-0271



### SPACEWARE EDUCATIONAL/GAME SOFTWARE

- **SHUTTLE DESIGNER** is the first in the **SPACEWARE** Series of Educational/Game Software Packages developed for the enjoyment and benefit of teenagers and adults alike.
- Go through the actual design and development of a Space Shuttle Mission.
- The results are then analyzed to determine the success or failure of the mission.
- Teaches from basic to advanced math and engineering concepts.
- Educational, Fun, and easy to use.

AVAILABLE ON:  
COMMODORE 64, TIMEX/SINCLAIR 2068,  
APPLE II(\*,e,c), and TI 99 with X BASIC

DISK - \$30.00

CASSETTE - \$27.00

CALL: JA SPECIALTY SOFTWARE  
3103 MEADOW BROOK TR.  
BIRMINGHAM, AL. 35243  
(205) 991-6914



COMPUTER NAMES ARE TRADEMARKS OF THEIR  
RESPECTIVE MANUFACTURERS.

## NEW LIFE FOR YOUR TS2068! YES! with IMPROVED ROMSWITCH

Practically 100% Spectrum software compatible.

Lets you run Spectrum programs on your TS2068!

- \* EASY INSTALLATION. No soldering, no drilling.
- \* Just plug inside your TS2068 freeing edge connector & cartridge port for other uses.
- \* External Switch-on switch selects Spectrum or TS206A ROM

SPECIAL SALE--ROMSWITCH & 007 SPY--\$54.95  
or ROMSWITCH & Winky Board 2000--\$69.98

007 SPY Tape Copier for SPECTRUM/TS2068 programs  
with ROMSWITCH, Emulator, SPEC. ROM-cassette \$9.95

Send for free catalog of new hi-res programs for  
TS1000, SPECTRUM programs & Manual, books etc.

WINKY BOARD 2000 Cassette-computer Interface for TS2068,  
Spectrum, TS1000-1500, ZX81/80

- \* Solves your LOADING problems
- \* Duplicates any TSZX cassette
- \* User friendly. Simply plugs into jacks.

\$22.95 assembled/tested, shipping incl. U.S./Can.

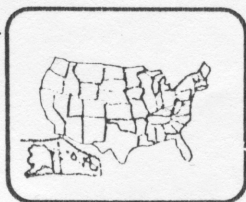


## RUSSELL ELECTRONICS

RD 1 \* Box 539 \* Centre Hall, PA 16828  
814-364-1325 MasterCard/Visa 10am-8pm Check/MO

## STATES AND CAPITALS

Only \$8



Find out how well you know the states and capitals  
of the United States. Self-teaching tool and map of  
United States challenge your abilities to name all 50  
states and capitals. ©TIMEX 1983

## HCS SERVICES

PO Box 1754 Portsmouth, OH 45662

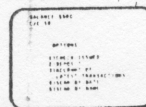
FISH LOCATOR...Your 2068 will analyze  
the season, weather and solunar tables  
for any location and tell you when,  
where and how to catch more fish. The  
author is a fishing guide with over 30  
years experience. \$19.95+\$2.00 S/H.  
BUDGETSOFT, 230 N Main, Rushville, In  
46173. Check, VISA & MC accepted.

## 5-Pack of TIMEX Programs ONLY \$12.00 (Add P&H \$1.50)



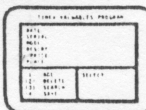
### THE CHECKBOOK MANAGER

The Checkbook is a personal of business checking  
account program which will store banking transac-  
tions, keep a running balance of the account, and  
sort transactions in a number of useful ways  
© John Heaney 1982 Softsync, Inc.



### THE HOME ASSET MANAGER

A home inventory program that can be invaluable in  
case of fire or theft. Records date of purchase, place  
of purchase, description, price, serial number and  
model number. Optionally yields total value of all  
assets. © TIMEX 1982



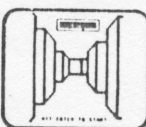
### THE COUPON MANAGER

For coupon clippers, the T/S 1000 can keep track of  
those coupons showing what they are for, where  
they are offered, and starting and ending dates. You  
can list them by store or type and bring the computer  
age into your household, saving time and effort  
© TIMEX 1982



### SUPERMAZE

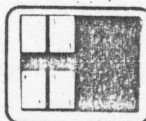
Navigate your way through a three-dimensional  
maze, complete with trapdoors, gold bars, marker  
stones, and a compass. Ten separate mazes, with up  
to four options each. Extremely challenging and a  
fine use of three-dimensional graphics. © Greg  
Harvey 1982 Softsync, Inc.



### THE GAMBLER

Program: Blackjack — Match your Blackjack skill  
against the T/S 1000 dealer. Full graphical display of  
cards dealt and winnings. Play is determined by  
Casino rules. Features include: Double Down, Mini-  
Max betting. The superb graphics of this game lend a  
degree of realism not seen before.

Program: Slot Machine — Displayed is the T/S 1000  
Slot Machine, complete with rolling numbers, payoff  
values, and condrop.



HCS Software, P.O. Box 1754, Portsmouth OH 45662

## Attention Technical Types: SUM\* is here!!!

SUM

\*Small User's Math  
is a compendium of numerical  
programs for the small system user  
by T-S Horizon columnist K.D. Lewis.  
It contains

## Powerful Algorithms

to handle first and second order  
differential equations; matrix  
eigenvalue/vector solution; curve  
fitting and cubic spline routines;  
determinants, matrix inversion;  
Laplace/Poisson equation; the heat  
or molecular diffusion equation; and  
more!

Send your check for \$15.00 to:  
Box C-6, 767 Hopetown Rd.,  
Chillicothe, Ohio 45601

Order SUM today!



# T-S NEWS

ITEM: Sir Clive goes jousting. Info world reported (2/11/85, p.13) Clive Sinclair recently got in a fistfight with the president of a competing computer company in England. According to Infoworld's source "Acorn computer ran some really nasty advertising accusing Sinclair computers of being unreliable (which) upset Clive Sinclair. Sinclair ran into the Acorn president in a pub and punched him in the nose."

ITEM: Software packages for the TS1000. HCS Services is selling the following software packages for the TS1000/1500/ZX81.

\* Home Pac. 5 programs from Timex.

The Gambler - blackjack and slot machine;  
Home Asset Manager - record of personal property, date/place of purchase, description, price, serial and model numbers;  
Supermaze - challenging 3-D game; Coupon Manager; and Checkbook Manager. Only \$12.

\* Finance Pac. 5 great Programs.

Stock Option Analyzer, Statistics, Money Analyzer, and two more financial programs Only \$12.

\* Game Pac. 5 games from SoftSync and others.

Meteorites, Space Commando, Hangman and 2 more great action games. Only \$12.

\* Grab Pac. 7 assorted programs for only \$10.

Guaranteed you'll be happy with at least 4 of these programs keep your favorite, return six and receive full \$10 refund.

Order from HCS Service, P.O. Box 1754, Portsmouth, Ohio 45662. Add \$1.50, postage and handling to total price.

ITEM: Back issues of Syntax and Syntax Quarterly. Syntax is offering 50 issues of Syntax (11/80 to 12/84), and all three issues of Syntax Quarterly, with the MW-100 plain paper printer thrown-in (for the TS1000/ZX81, prints 16 characters wide, tape two strips together to get 32 wide) for only \$145. (The regular price of all this would be \$350. From Syntax, RD 2, Box 457, Harvard, MA 01451.

ITEM: Exciting Adventure Game for Spectrum! If you have a TS 2068 with a Spectrum Emulator and you like adventure games this is the one for you. "The Lords of Midnight" is an extremely popular adventure game in England. The game features rich panoramic views on your TS 2068 screen, as you guide individual characters and send armies against the evil witchking, Doomdark.

Also available is the sequel "Doomdark's Revenge," a whole new adventure that can generate up to 48,000 screens. Both of these programs are available for only \$12.95 (plus \$1.00 postage) from the English Micro Connection, 15 Kilburn Court, Newport, R.I. 02840. 1-401-849-3805.

EXCLUSIVE OFFER TO T-S HORIZONS SUBSCRIBERS. For a limited time the Spectrum adventure game "Doomdark's Revenge" features a special game map. This map (approximately 24x17 inches) is plastic coated and can be used to trace your journey through Doomdark's territory with a marker. To reuse it, wipe with a damp cloth. A \$3 value, you can get it free with the purchase of "Doomdark's Revenge" BUT YOU MUST MENTION THAT YOU SAW IT IN T-S HORIZONS.

ITEM: Want to hear what a Zebra Speech synthesizer (for the TS1000 and 2068) really sounds like? Call 718-625-6220 and listen.

ITEM: Buyer's Guide to Sinclair-Timex Products and Services. Lists over 1000 products from over 120 suppliers, including publications, software and hardware. The guide is published in a 3-ring binder for easy updating. Regular updates to be published. \$20 from D. Lipinski Software, 2737 Susquebanna Road, Roslyn, PA 19001. 215/572-6812.

ATTENTION: Timex Sinclair related companies. Dale Lipinski, publisher of the Buyer's Guide described above is inviting all suppliers of Timex Sinclair related products to submit information to be included in the guide. See above for address and phone.

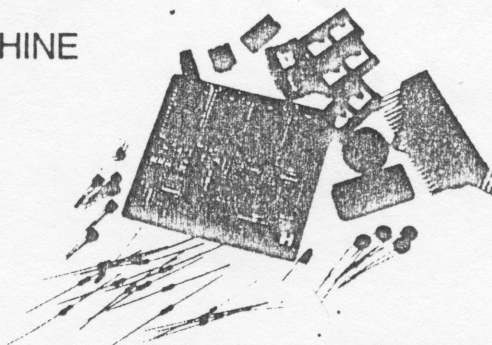
ITEM: Bill Moreland, owner of Magic Castle Video in Columbus, Ohio, and former T/S Horizons columnist, no longer handles Timex Sinclair merchandise, as some back issue purchasers have discovered. However, if your looking for the best in home video, Magic Castle is still the place to go. TSH

# *The HUNTER Board*

## *Add Memory that won't Forget!*

DESCRIBED IN JULY/AUGUST 1983 **Radio Electronics**

- ✓ ADD YOUR OWN SYSTEM UTILITIES
- ✓ BUILD UP A LIBRARY OF MACHINE LANGUAGE SUBROUTINES
- ✓ UP TO 8K NONVOLATILE RAM
- ✓ USE HM6116LP CMOS RAM OR 2716/2732 EPROM
- ✓ COMPATIBLE WITH 16K RAM PACKS



**\$32<sup>95</sup>**

plus \$1.95 shipping and handling

What a super product!...conceived and executed very nicely...and with quality components.

**(SYNTAX QUARTERLY Winter 82)**

For versatility this is even better than an EPROM...ranks quite high on the list of "must-haves"...

**(SYNC Magazine Mar/Apr 83)**

Provides the user with instant software...an extremely versatile memory extension...

**(Z-WEST June 83)**

Complete kit with one 2K 6116LP-3 .....	\$32.95
Additional three 6116LP-3 .....	\$15.00
Bare pc board & manual .....	\$13.05
Female connector 23/46 gold bifurcated .....	\$ 5.00
Kit for EPROM use only .....	\$22.95
Assembled & tested with 2K .....	\$47.95
Assembled & tested with 8K .....	\$65.95
Shipping & handling per order .....	\$ 1.95

Send check or money order to the address below:

**HUNTER, 1630 FOREST HILLS DRIVE, OKEMOS, MI 48864**



# The English Micro Connection

15 KILBURN COURT

NEWPORT, RHODE ISLAND 02840

TELEPHONE: 401/849-3805

## From TIMEX 2068 To ZX SPECTRUM

While many owners of Timex 2068 computers are enjoying Spectrum software, a lot of people have asked us how it is done. We know of three methods presently being used:

1) SPECTRUM ROM - You must remove the Timex ROM chip from the computer and replace it with a Spectrum ROM. While you will be able to run Spectrum software you will not be able to run 2068 software.

2) EMULATOR - The Emulator board fits into the 2068's cartridge dock. You are now ready to run Spectrum software. When you want to run 2068 software just remove the Emulator from the cartridge dock.

3) ROMSWITCH - The ROMSWITCH is a two-piece system; the first, contains a Spectrum ROM chip, and you must remove the Timex ROM from the computer and mount it on the ROMSWITCH board. You then insert the ROMSWITCH board where the Timex ROM was removed. The second step is to mount the magnetic slide switch to the computer case. When you want to run either Timex or Spectrum software just slide the switch to the mode required.

ALL THREE OF THE SYSTEMS LISTED ABOVE CAN BE OBTAINED FROM EMC. WE ALSO HAVE THE NEW MICROCRIVE ADAPTER BOARD THAT ALLOWS YOU TO NOW USE THE SPECTRUM MICROCRIVES.

ITEM	PRICE \$
<u>SPECTRUM ROM CHIP</u>	\$ 14.00
<u>EMU 1 EMULATOR</u>	\$ 45.00
<u>THE ROMSWITCH</u>	\$ 49.00
<u>EMU 4 MICROCRIVE ADAPTER</u>	\$ 30.00
To operate microdrives you also need an	
EMU 1 Emulator.	
<u>EMU 5 COMBO</u>	\$ 75.00

The combo consists of an advanced version of the EMU 1 and a microdrive adapter.

## ITEM

### ZX SPECTRUM PLUS

\$ PRICE \$  
\$159.95

The latest Spectrum computer features a QL type case, and the first Spectrum with a real keyboard. As this is the English model, you must supply the 9 volt DC power supply.

### ZX SPECTRUM EXPANSION SYSTEM

\$129.95

The Expansion System consists of an Interface I, a Microdrive unit and a Cartridge Pack containing: A WORD PROCESSOR, A FILING SYSTEM, A GAME, A GAMES DESIGNER, A BLANK CARTRIDGE, and an INTRODUCTORY CARTRIDGE.

### ZX MICRODRIVE UNIT

\$ 61.50

One Microdrive unit with an Introductory Cartridge.

### ZX MICROCRIVE CARTRIDGE

\$ 3.00

One blank Microdrive Cartridge, with at least 85K capacity.

### ZX EPRINT III INTERFACE

\$ 45.00

This Printer Interface has both an RS232 and Centronic output, no software is required due to the driver software being on EPROM. Cables are available for \$14.00 each.

### ADAPT RGB OUTPUT MODULE

\$ 48.00

Just plug this module into the back of your Spectrum and connect to an RGB monitor, you won't believe the difference.

### U SLOT

\$ 18.95

Allows you to connect two different peripherals at the same time.